



SATURDAY, DECEMBER 11, 1875.

Norton's Improved Rail-Punching Machine.

The illustration herewith represents a light and compact rail-punch, the invention of Mr. Charles Norton, foreman of the machine shops of the North Pennsylvania Railroad in Philadelphia. The punch is described as follows in his patent specification:

To carry out the object of my invention I provide a strong metallic frame or housing, A, on the upper portion of which is formed a long hub, A', for the reception of a nut, B', and on the lower portion a rail-table, A². A stout screw, B, having a cap, B², for the insertion of a lever, works in the nut B', the lower end of the screw carrying a square or rectangular punch, C, the depth of which is greater than that of the slot to be punched in the rail. The punch is connected to the screw by set-screws or pins, b, the inner ends of which enter a circular groove formed in the upper end of the punch, which is at that portion cylindrical. A hard-metal washer, c, is interposed between the top of the punch and the bottom of the orifice in the screw in which it rests. The punch might be operated by a lever or levers instead of a screw, if preferred. A guide, a, secured to the housing incloses the punch and insures its rectilinear motion. A long rear bearing, a', for the punch is formed upon the frame A, and extends from a point as high up on the frame as will give sufficient clearance between itself and the upper cylindrical portion of the punch down to the lowest extremity of the travel of the latter, thus affording an abutment to the force of resistance of the flange to be punched for the entire duration of the operation, and preventing the bending or breaking of the punch therein. In the drawing the lower portion of the bearing is shown as formed upon the back of the opening in the die through which the pieces of metal punched out fall; but it is obvious that it might be made continuous upon the frame, if preferred, and in such case its projection into the die would serve to hold the latter in position. The die D is fitted into a dovetail recess in the lower portion of the frame A, being adjusted and held firmly in position by a feather, d, and key d'. Its upward surface is on a level with the table A², on which the rail is supported, and a rib or flange, d², is formed on its inner side, against which the rail-flange to be punched rests. A gauge, E, is placed on the opposite side of the table, and is held thereto by screws e, which pass through slotted holes in the gauge, to enable the latter to be adjusted and set at such distance from the rib d² as may be required by the width of the rail. The frame A and hub A' being entirely clear of the web and top of the rail, it will be seen that rails of different heights can be punched with equal facility. A vertical opening is bored or cut through the frame to enable the pieces of metal punched from the rail to fall out, and the lower end of the punch-guide is set sufficiently near to the die to enable a "puller off" to be dispensed with.

In the operation of the punch the bearing a', by reason of its relative position and extent, effectually resists the tendency to bend or break the punch encountered in the passage of the latter through the rail-flange. The projection of the punch beyond the edge of the rail, in order that it may abut against the bearing a', gives it so much of a free and unused surface that it may be readily reversed when worn, and will then present a new working-surface to the rail-flange.

FIG. 2.

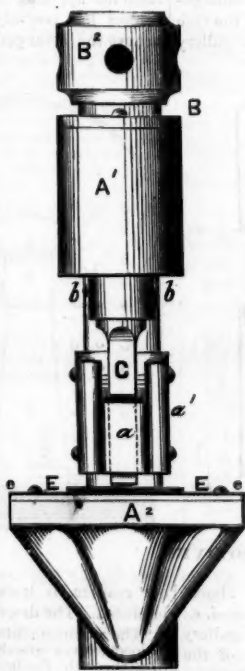


FIG. 3.

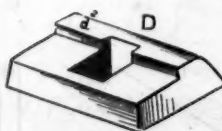
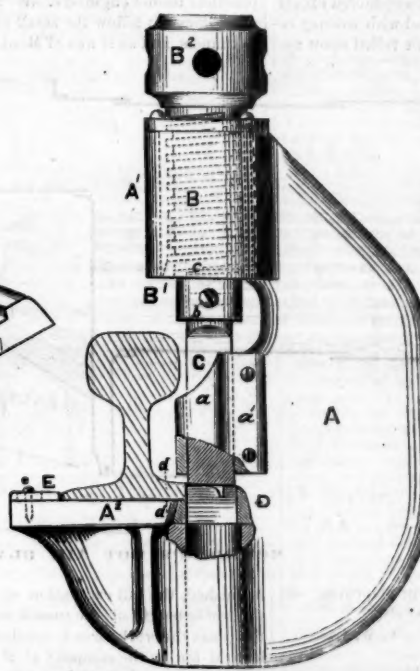


FIG. 1.



NORTON'S IMPROVED RAIL-PUNCHING MACHINE.

out their connection with reference to matters of transportation, so that in order to arrive at correct conclusions on the many questions which it is proposed to investigate, it will be necessary to collect and compare the results of observations of a large number of persons.

Yours, truly,

P. H. DUDLEY.

ENGINEERING OFFICE OF W. W. EVANS,
NEW YORK, Oct. 30, 1875.

P. H. Dudley, Esq., President, etc.:

DEAR SIR: I am in receipt of your favor of 25th inst., and am much pleased to find you have an instrument nearly completed by which you can determine the resistances of railway engines, cars and trains. It is all-important to know these resistances under different conditions. As yet we know but little of them with our system of locomotives and cars. If we took the English experiments to go by, we would be greatly in error, particularly as regards curve frictions. Look at the tables made out by Jettie in Queensland on his experiments in "Engineering," Oct. 29, 1869, and see how useless they would be to our engineers here.

To get such a series of experiments as we require will cost a big pile of money and take time. Now, how are we to get the money? The railway companies are the interested ones, and should furnish the money.

If I was in good health and full of energy, I would take it on myself as a mission and go preaching the merits of this thing to the railway companies, but many of the railway managers are too indifferent to all matters of scientific investigation to understand the first elements of railway economy. I will jot down a few points of what may be considered our requirements in this matter.

1. To make sure we have a reliable instrument to operate with and record results, at different speeds, and with large and small, long and short, heavy and light trains behind the engines.
2. To measure the frictional resistance of the engine, each type alone, at different speeds, in straight and curved lines of different radii.
3. The same of the engine, when hauling light and heavy trains at different speeds and on different gradients.
4. The frictional resistance per ton of one car empty at different speeds, on straight and curved lines.

5. The same with the car half loaded and when carrying full load, giving in each case the size of wheel, and length and diameter of journal.

6. The same with two, three, four, five and six cars, and up to as many as the engine can haul at each speed.

7. The frictional resistances resulting from not raising the outside rail, or say the resistances due to centrifugal force, at different speeds and different elevations of outside rail, on curves of different radii.

8. The resistances due to coning or not coning the tread of the wheels.

9. The resistances due to long and short journals in proportion to weight on each wheel, or axle, at different speeds.

10. The resistances due to running eight or four-wheeled cars, on straight and on curved lines, at different speeds.

11. The resistances due to having the wheels fixed on the axles, or loose, or one wheel loose and one tight, or one pair loose and one pair tight in a truck, and if there is any difference in having the loose pair the leading or trailing wheels in a truck, and if these resistances vary as the speed raises, independent of general resistance due to speed.

12. The resistance due to wheels of different diameters, with uniform loads at different speeds.

13. The resistances due to brake-shoes of wood and of iron, each being applied equally by springs or levers.

14. The resistance on stopping trains due to having the wheels scotched by powerful brakes, or so braking them that they can turn slowly.

15. The ratio of frictional resistances to gravity, on different gradients at different speeds.

16. The resistance due to long versus short trains, on sharp curves, the aggregate weight being the same.

17. The resistance due to long eight-wheeled versus short four-wheeled cars; in other words, the resistance due to steady running or unsteady running, the unsteadiness being the result of over-hanging weight in the four-wheeled car.

18. The resistances due to gauge of track on curves.

There are more points to examine and experiment on, which do not occur to me just now; but I have given above enough to show that it is no small matter to cover the whole ground of railway resistances and exhaust the subject.

It is now forty-five years since the railway era fairly commenced, and on many points connected with railway resistances we are still groping in the dark, from want of formulas deduced from practical experiments, proved beyond doubt and published for the benefit of the world. There are still a great many clever engineers who believe in the merits of coning the tread of railway wheels, but who has proved it? I hold that when two axles are fixed parallel, the cone on the wheel is of no use, but is a positive detriment, as it tends to spread the track, injure the rails, and, when on straight lines, to increase the frictions.

A large portion of the world still believe in four-wheeled cars, and merely because they were born and brought up in that "groove." I can point you to a railway in Chili, S. A., which has mountain gradients and sharp curves. It is stocked with English four-wheeled cars; its history is a record of broken axles and accidents. Recently a broken axle destroyed a train, a bridge, and thirty lives, all at once. They cannot get out of the four-wheeled "groove," although they have, staring them in the face, and connecting with them, a railway stocked with American 8-wheeled cars, where broken axles are seldom if ever heard of; and yet the axles in the 4-wheeled cars are probably superior in quality of metal to the axles on the American cars, both roads belonging to the Government and working under the same conditions of climate, prices of labor and materials. Show that the ratio of expenses to receipts is more than 50 per cent. greater on one road than the other, would it not be economy on the part of this Government to spend some money in inquiring into the causes of this great difference?

Every few years some dogmatic man comes out with the old railway "crotchet" of the merits of having loose wheels on the axle, or at least one wheel loose, or each wheel to have its own axle. This crotchet has just been revived again, and its merits certified to by first-class men, on the strength of which an engineer rushes off to England to secure a patent on a thing which has probably been patented in England in one form or another a half-dozen times. I am told and urged to believe that this invention on a level curve of ordinary radius will save 60 per cent. (!!!) of the power required to haul a ton over it. Now if some genius will invent something else to save the other 40 per cent., the world will be greatly indebted to him, as well as to the saviour of the 60 per cent.

I am willing to admit that some saving in tractive power can be effected on curves, in hauling loads on trucks at slow speed, by having wheels loose on axles; but I do not believe it amounts to anything appreciable on railway trains at over 20 miles an hour, and I think Mr. Wells' experiments with models prove it. Is it not time that we prove this point to be right or wrong, and relieved the mind of genius, so it can return to "perpetual motion" and other kindred "hobbies"?

I maintain that the resistances of long trains on sharp curves are greater than they are on short trains of the same aggregate

Contributions.

The Need of Experiments to Determine Resistances on Railroads.

CLEVELAND, Ohio, Nov. 22, 1875.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Herewith inclosed please find letter from W. W. Evans, Esq., C. E., of New York, in answer to one I wrote, asking him to state some of the questions it would be desirable to investigate in regard to resistances upon railways. There is so much in the letter of general interest, and a knowledge of the subjects mentioned is of the greatest importance to our great and constantly increasing railway system, that I think the letter, if printed in your valuable paper, would have a tendency to draw out the opinions of other engineers upon the subjects. I have purposely delayed answering his letter until a test could be made of the dynograph upon some railway to see if it would work as expected. It is now working so nicely that I am confident accurate experiments can be made with it.

I do not wish at the present time to enter into a general discussion of the letter. As the object of the proposed investigations is to increase our knowledge and, if possible, settle many of the questions which he has mentioned, I wish to enter upon the work without bias as to any part of our system, desiring only to arrive at facts.

As Mr. Evans says, "There are more points to examine and experiment upon than he has mentioned." In fact, he has stated but a part of the subjects which should be examined. I do not expect that reliable results can be obtained from a few trials in which but a part of the controlling influences are taken into consideration. I have not designed the "dynograph" for the purposes of sale, so railway companies need not feel afraid of being bored to purchase it, but to determine and elucidate many of the principles pertaining to railway economy. It is not so much that we need the discovery of new principles as the making the application of those already known and fully demonstrated. From the few experiments already made I can plainly see that

weight, the journals in either case not being overloaded. If this is so, it is, when proved, another heavy hammer falling on the head of "narrow gauge."

I maintain that the 4-wheeled car grew out of the 4-wheeled coach and 4-wheeled wagon, and that it is, theoretically and practically, an error; that the axles being placed as close together as possible, much of the car body and load is overhanging weight; that the car and load feel in running every inequality of the track, and oscillate in the direction of its length, and that when this takes place with all the cars in a train, it eats up a great portion of the tractive power, to the annoyance and disgust of that intelligent animal, the "iron horse." This is not the case with the 8-wheeled car: the body being long, and resting on two 4-wheeled trucks at the ends, it runs steady; the trucks feel the inequality of the track, but the body and load do not, and the engine has fair play in handling it.

In Peru, where I have been interested in building railways, the Government has in the contracts for all the great mountain lines fixed the maximum gradient at 4 per cent., or 211.20 feet per mile, and the minimum radius of curvature at 350 feet, but directs that when the minimum curvature is used, the gradients combined with it shall not exceed 3 per cent., or 158.40 feet per mile. Now as the gravity resistance of one ton on a 4 per cent. gradient is 89.60 pounds, and as the gravity resistance on a 3 per cent. gradient is 67.20 pounds, the allowance for curve frictions in this case is 22.40 pounds per ton, to equal the 4 per cent. gradient. Now who is there prepared to say that this determination of so important a matter is correct? I believe that with engines traversing curves as easily as some of our engines now do, this allowance is in excess of what is required.

You will be doing a great service to the railway interests of this country if you can, by a series of well-conducted experiments, elucidate some of the laws connected with railway resistances and establish formulas that may be relied upon and

there is no doubt that with the same ground, the progress of the work would be better than there, where it was, at the end, more than nine feet a day on each side.

The practical direction is also given in quite a different manner. All of our readers know that in constructing a tunnel we commence by piercing a small gallery at the top or at the bottom of the definite tunnel, and follow by enlarging the gallery, in order to complete the full excavation. The engineers of Mont Cenis used the bottom gallery; the contractors of the St. Gothard Tunnel use the top gallery, which is preferred in France and in Belgium. As for transportation, there was a broad gauge, here a narrow one, with small wagons.

The hardness of rock is in some places much greater at St. Gothard than at Mount Cenis, and the workmen suffer by water, which runs into the tunnel with force and in large quantities, and causes great injury to their health. These circumstances cause the progress of the work not to be in proportion with the improvements of the machinery.

The last report of the Swiss government shows the figures, which we take as a basis of our estimates.

It is true, indeed, that the progress of the top gallery or small gallery is 9 to 12 feet a day on each side; but the excavation of the tunnel, which is the principal work (for there is ten times more work in the enlargement than in the gallery in drilling, blasting, and, above all, in transportation), does not make any progress.

Thus the progress of the top gallery was, on the 30th of April, of the present year, for both sides, 13,266 feet, or 2½ miles, while the progress of the tunnel excavation was only about 1,000 feet.

This kind of working appears to be very strange to many practical tunnel engineers. We are surprised that the enlargement does not follow the small gallery, as is generally the case in tunnels, and as it was at Mont Cenis; for, when that gallery

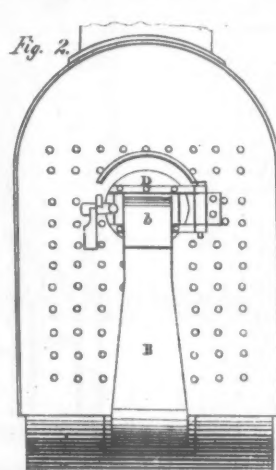
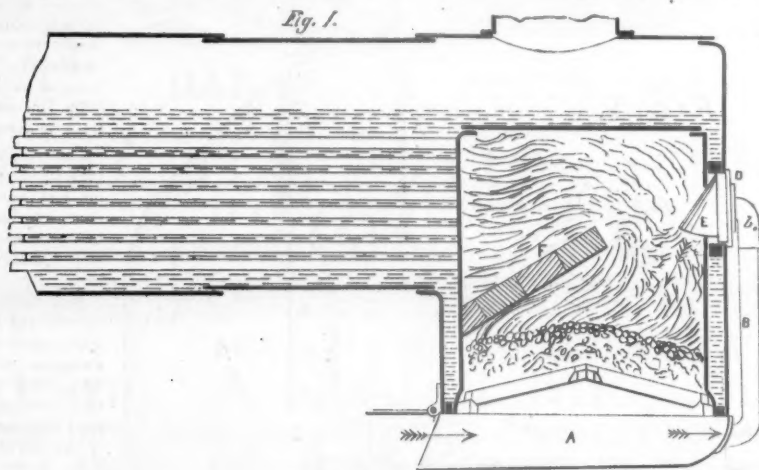
was an increased movement and a slight advance in the freight rates by lake. The average for November, 1875, is a trifle higher than that for the corresponding month last year. This will be seen from the annexed statement of the rates by lake from Chicago to Buffalo on wheat and corn, and the average rates on the same cereals from Buffalo to New York by canal in November for the ten years named:

Year.	LAKE.		CANAL.	
	Wheat.	Corn.	Wheat.	Corn.
1866.....	13.5	11.7	19.6	16.3
1867.....	9.0	7.0	19.1	16.3
1868.....	9.3	8.3	19.2	16.3
1869.....	10.3	9.8	21.7	19.0
1870.....	8.5	7.6	11.9	11.5
1871.....	10.1	9.7	18.9	14.1
1872.....	12.4	11.4	18.0	14.0
1873.....	7.4	6.9	12.3	10.6
1874.....	4.6	4.2	9.7	8.7
1875.....	5.9	5.6	10.5	9.1

Although the average rate by lake for last month was more than a cent higher than that for November, 1874, it is a cent and a half below that for the same month in 1873, and less than 50 per cent. of the November rate in 1872. By canal the same peculiarities are seen. The average rate on wheat to New York was 10.5. It was 9.7 cents in the year preceding, 12.3 cents in 1873, and 16 cents in 1872. With the exception of 1874, the average rate by canal during last month was the lowest on record for November. A freight of 10.5 makes a sorry showing when compared with 21.7 cents, the November rate in 1869, 23.1 cents, that for the same month in 1865, or 25.6 cents, that for 1861. Those who are so fond of expatiating upon high freight rates, and who contend that the reduction of tolls has had no effect on the charges by canal, would do well to study these figures.—*Buffalo Commercial Advertiser.*

Hot Blast for Locomotives.

In an old report of the Transactions of the Institution of Engineers in Scotland, we find an illustration and the following description of an arrangement designed by Mr. William Morrison for applying hot blast to locomotive furnaces. As this subject has recently been discussed in this country, and as we believe the arrangement illustrated will be new to nearly all



MORRISON'S HOT AIR BLAST FOR LOCOMOTIVES.

used not only in constructing new lines, but in improving old ones.

I remain, dear sir, yours sincerely,
W. W. EVANS.

The St. Gothard Tunnel.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The St. Gothard Tunnel is one of the most interesting works of our century. Though it comes after the Mont Cenis Tunnel, which was the first where mechanical power was applied in the cleverest manner to mining, it has the peculiarity of being nearly two miles longer than the latter.

The object of the St. Gothard Tunnel is to establish railway communications between Germany and Italy, without passing over French territory. The work is in Switzerland, between German and Italian districts.

The company is a German one, and the contractors of the tunnel are Swiss. The learned Professor Colladon, who took a prominent part in the piercing of Mont Cenis, has the direction of the scientific branch. The air compressors used at St. Gothard are engines of his contrivance; whose qualities are to work quickly and to furnish compressed air in large quantities, at six atmosphere pressure, though the machinery is rather small. Their principle is to compress air in cylinders in which water runs under pressure, in order to prevent the warming of air and engine. There is a great advantage over the Mont Cenis compressors with water pistons.

Another improvement, of no less importance, is due to a countryman of our own, Mr. McKeon, inventor of a rock drill, whose speed is double that of the Sommeiller rock drill, constructed and used by that eminent Frenchman at the first tunnel.

The McKeon rock drill is a light engine, moved in the same manner as a steam engine, by compressed air. The steel drill is the prolongation of the piston rod, and makes 1,200 strokes per minute. A three-foot hole, in hard granite, is pierced in five minutes.

The blasting is done with dynamite, ten times the strength of black powder.

The transportation of the debris is executed with compressed air locomotives, which possess the precious advantage of purifying the atmosphere of the tunnel instead of vitiating it, as was the case at Mont Cenis, where transportation was effected by horses till the end, though Sommeiller also constructed in his last days a compressed air locomotive, on the principle of the Zeissler carriage, 30 years ago.

Thus the St. Gothard Tunnel machinery is made scientifically in a manner much more perfect than that of Mont Cenis, and

is finished, the full excavation or the enlargement for almost the whole length of the tunnel will remain to be done—i. e., ten times the work already finished. The cubic foot of gallery is paid for by the company at a higher rate than that of the remainder, and it may be a financial question for the contractors which induces them to prefer this method; but we fear that the true reason is the difficulty of transportation. In this case, the progress of the small gallery would be without importance, and every day lost for enlargement would be a day lost in the time of finishing the work. This might be avoided by pushing the enlargement works in the same manner as the gallery. The progress would certainly appear much less than before, but it would be greater in reality, for there would not be loss of time needed for the completion of the whole work. And thus it is obvious that the tunnel commenced only three years ago could be finished in nine or ten years.

If we consider that the building of the Mont Cenis Tunnel required 15 years, we must acknowledge that there is a great improvement in the St. Gothard Tunnel, which is two miles longer, through harder rock, and with abundant water.

Cast Iron in Safety Switches.

Dec. 7, 1875.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Some unhappy cuss is growling because the outside guards of the Tyler switch are made of cast iron. Please tell him through your columns to take a piece of old steel rail seven feet long, cut off a part of the base at one end, then place it outside of the switch rail and five inches from center at end of switch rail, bring the other end to one-half inch at the top, make a wedge of cast iron which will fill the space between the two, and bolt the whole firmly together.

Slope the end of the wedge to receive the wheel.

MICAWBER.

Freight Rates by Water.

In examining the grain traffic of the navigation season of 1875 we find the effect of higher railway charges from the West in a slight average improvement in the freight rates by water during the closing months. The extraordinary and unwise competition of the roads for the grain business during the greater part of the season forced prices down to the very lowest figures. The railways carried flour and grain at a loss, and only the largest and most economical vessels on the lakes could find any profit in it. But the announcement in October that the managers of all the trunk lines had agreed upon an advance, made grain-dealers anxious to get their property within reach of the seaboard before the close of navigation. Consequently there

our readers, as it was to us, we have had the engravings reproduced. The description is as follows:

"The arrangements for supplying heated air to the furnaces of locomotives are shown in fig. 1, which is a longitudinal section through the fire-box of a locomotive, and fig. 2, a back elevation. The air is taken from the ash-pan, A, in passing through which it is heated by the downward radiation from the fire. An air pipe, B, communicating with the back end of the ash-pan, A, is carried up through the foot-plate, C, and forms a continuous passage with a duct, D, fixed on the outside of the fire-door, D, and moving with the door clear of the pipe, B, when necessary. The air entering through the fire-door is directed downwards by a deflecting hood, F, fixed on the inside of the fire-door, so as to meet the ascending gases, these gases being constrained to move towards the fire-door before entering the tubes by the fire-clay arch, F. In practice the improved arrangements have been found to give not only the absence of smoke, but also an important saving in fuel. In order to obtain a measure of the improvements, the locomotive was worked six days with cold air admission, and six days with hot air. These experiments showed that there was a saving of 624 lbs. of coal in consumption for the week, the total miles run and coal consumed being as follows:

With cold air, 418 miles, 8,216 lbs. coal; or—19.6 lbs. per mile.
" hot air, 428 " 7,592 " 17.7 lbs. per mile."

"The locomotive experimented with was a small one, the dimensions of which were as follows: cylinders, 10x15 in.; driving wheels, 5 ft.; area of grate, 4.75 ft.; sectional area of air-pipe at the fire-door, 18 square inches.

"In explanation of the construction of the fire-box Mr. Morrison said:

"The fire-box was made in the ordinary way. The air-tube was attached to the ash-pan, and the air was supposed to be drawn in by the action of the blast in the chimney. They found that there was a great pressure there, and that the air entered with great velocity. On trying it experimentally, he had found the air rushed in at the rate of fifty miles an hour; and also on trying the thermometer below the foot-plate of the engine, it registered 220 degrees, but that was the full range of the instrument used. On running the engine backwards, he found that the air entered with a pressure of only about 1½ lbs. per square foot less than when running forwards. He had found that the introduction of hot air into the fire-box had reduced the smoke very much; in fact, when the engine was in motion, there was little or no smoke emitted."

"The President said that he had been told by the stoker, who had assisted in the experiments, that the fire was much more vivid with the hot air than the cold, and that the place where the cold air was admitted was characterized by blackness."

Master Mechanics' Association—Circular of Inquiry.

DEAR SIR—The undersigned were appointed at the last convention of the American Railway Master Mechanics' Association to report on the "Best and Most Economical Metal for Locomotive and Tender Bearings." They therefore respectfully request that you will give them the

benefit of your experience, and reply to the following questions as early as possible:

1. What composition of metals do you use on your railroad for engine driving axle-box bearings, what for engine truck bearings, and what for tender bearings?
2. Please give the length and diameter of journals, thickness of bearings, and the average mileage run per 1-16 of an inch in thickness of metal worn away in each of the above cases, and the amount of "end-play" allowed to each class of bearings on axle journals.
3. What composition of metals do you use for connecting and coupling rod bearings?
4. Do you insert Babbit or white metal in any of your bearings, and do you consider its use as of any advantage in reducing the frictional wear of either the journals or bearings, and what form of recess in the bearings do you cut for receiving this metal?
5. Have you made any experiments in different alloys for journal or other bearings on locomotive engines?
6. Please state what these experiments were, and the results attained.
7. From your experience what metal would you recommend for the different bearings on locomotive engines?

The Committee will also be glad to receive any additional information or suggestions relating to the above subject.

JOHN ORTTON,
F. M. WILDER, } Committee.
PETER CLARKE,

Please address replies to JOHN ORTTON, Great Western Railway, Hamilton, Ontario, Canada.

General Railroad News.

TRAFFIC AND EARNINGS.

Coal Movement.

Coal tonnages for the week ending Nov. 27 are reported as follows:

	1875.	1874.	Inc. or Dec.	P. c.
Anthracite.....	591,566	467,186	Inc. 124,380	26.6
Semi-bituminous, Broad Top and Clearfield.....	27,515	.....	.....	.....
Cumberland.....	49,120	.....	.....	.....
Bituminous, Barclay.....	8,282	.....	.....	.....
" Western Pa.....	34,797	.....	.....	.....
" West Va.....	5,741	.....	.....	.....

The Philadelphia & Reading Coal & Iron Company has issued orders to stop work on thirty of its collieries in the Schuylkill region, leaving only ten at work. The reasons given are the continued dullness of the trade and the large stock already on hand at the storage yards. The ten collieries still working will produce enough to supply the railroad, the furnaces taking coal from the company and the colliery engines. A large number of the mines which are worked in connection with the Reading Company will also suspend work soon.

The coal tonnage of the Pennsylvania Railroad for the third week in November was:

	Tons.
Anthracite.....	23,648
Bituminous.....	66,026
Coke.....	12,712
Total.....	102,386

The following coal tonnages have been reported for the company years ending Nov. 30:

	1875.	1874.	Inc. or Dec.	P. c.
Philadelphia & Reading:				
Anthracite.....	4,964,324	5,743,757	Dec. 779,433	13.6
Bituminous.....	295,881	287,243	Dec. 8,638	12.2
Total.....	5,260,205	6,031,000	Dec. 770,795	13.3

	1875.	1874.	Inc. or Dec.	P. c.
Schuylkill Canal:				
Anthracite.....	734,694	717,507	Inc. 17,187	2.4
Pennsylvania & New York:				
Anthracite.....	748,073	714,080	Inc. 34,043	4.8
Bituminous.....	395,191	302,717	Inc. 92,474	10.7
Total.....	1,083,264	1,016,747	Inc. 66,517	6.5

The total shipments over the Reading road include coal for the company's use, which is not included in the separate items.

Flour and Grain Movement.

For the week ending Nov. 27 receipts and shipments are reported as follows (flour in barrels and grain in bushels):

	1875.	1874.	Inc. or Dec.	P. c.
Flour:				
Lake ports' receipts.....	122,727	125,106	Dec. 2,379	1.9
" " shipments.....	141,022	113,014	Inc. 28,008	24.8
Atlantic ports' receipts.....	254,234	256,890	Dec. 2,656	1.0

	1875.	1874.	Inc. or Dec.	P. c.
Wheat:				
Lake ports' receipts.....	1,970,904	962,198	Inc. 1,008,706	104.8
" " shipments.....	1,419,172	697,568	Inc. 721,604	103.5
Atlantic ports' receipts.....	2,069,385	2,092,286	Dec. 22,901	2.9

	1875.	1874.	Inc. or Dec.	P. c.
Grain of all kinds:				
Lake ports' receipts.....	3,376,429	2,220,849	Inc. 1,155,580	47.5
" " shipments.....	2,376,015	1,042,633	Inc. 1,333,382	127.8
Atlantic ports' receipts.....	4,056,545	3,977,044	Inc. 79,501	2.0

For the week 32 per cent. of the lake ports' shipments went by rail this year, against 27 per cent. in 1874 and 25 per cent. in 1873.

For the crop year from Aug. 1 to Nov. 27, lake ports' receipts have been:

	1875.	1874.	1873.	1872.
Flour, bbls.....	1,893,155	2,079,531	2,164,720	2,066,436
Wheat, bush.....	34,231,579	31,040,915	30,775,297	27,581,116
Corn, bush.....	17,507,395	16,524,958	25,045,938	25,815,098
Oats, bush.....	13,559,003	10,711,798	10,824,413	10,440,880
Barley, bush.....	3,870,093	3,451,732	3,134,171	5,611,568
Rye, bush.....	1,126,793	860,849	866,962	927,374
Total grain, bush.....	70,295,463	62,290,262	76,046,781	70,375,997

New York grain exports for the eleven months ending with November have been:

	1875.	1874.	Inc. or Dec.	P. c.
Flour, bbls.....	1,650,646	2,072,401	Dec. 421,755	20.3
Corn meal, bbls.....	166,026	115,141	Inc. 50,885	44.2
Wheat, bush.....	24,609,019	33,290,290	Dec. 8,681,271	26.1
Corn, bush.....	12,423,835	17,966,717	Dec. 5,542,882	30.8
Oats, bush.....	120,227	116,897	Inc. 3,330	2.8
Peas, bush.....	407,898	434,972	Dec. 27,074	6.2
Total grain.....	37,560,979	61,808,816	Dec. 24,247,837	27.5
Total, 1873.....	38,635,420			
Total, 1872.....	37,518,875			
Total, 1871.....	33,630,533			
Total, 1870.....	17,786,892			

Thus the exports of this port were 27 1/2 per cent. less than in 1874, and 2 1/2 per cent. less than in 1873, but larger than for any previous year.

Chicago grain receipts and shipments for the week ending Dec. 4 were:

	1875.	1874.	Inc. or Dec.	P. c.
Receipts, bush.....	873,180	1,045,343	Dec. 172,163	16.6
Shipments, bush.....	672,927	351,947	Inc. 320,980	91.2

Buffalo grain receipts for the eleven months ending Nov. 30

are reported as follows by the Commercial Advertiser of that city:

	1875.	1874.
By lake.....	996,490	82,289,357
By rail.....	1,312,800	18,446,930
Totals.....	2,309,290	70,736,287

The decrease in flour this year was 21.4 per cent., and in grain 11.4 per cent. Of the flour 56.8 per cent., and of the grain 26.1 per cent. came by rail. The shipments for the same period were:

	1875.	1874.
By canal, bushels.....	45,471,957	40,982,288
By rail, bushels.....	13,603,712	11,033,092
Totals.....	59,075,669	52,015,370

An increase of 7,060,399 bushels, or 13.6 per cent., showing very heavy shipments for November.

Baltimore grain receipts for November were as follows:

	1875.	1874.	Inc. or Dec.	P. c.
Flour, barrels.....	188,244	179,143	Inc. 9,101	5.1
Wheat, bushels.....	409,932	501,341	Dec. 91,409	19.4
Corn.....	631,303	353,198	Inc. 278,105	78.7
Oats.....	75,412	74,711	Inc. 701	1.0
Rye.....	5,035	5,222	Dec. 188	3.6
Total, bushels.....	1,262,778	1,740,617	Dec. 477,839	27.4

Flour is reduced to wheat in the totals.

Petroleum Exports.

For the eleven months ending with November petroleum exports have been:

	1875.	1874.	1873.	1872.
From:				
New York.....	138,370,410	139,815,744	137,016,083	78,595,346
Boston.....	2,396,264	3,444,955	2,379,043	1,543,456
Philadelphia.....	60,551,210	68,090,887	80,423,292	53,909,978
Baltimore.....	24,080,984	5,943,290	3,402,204	1,880,563
Total gal.....	223,398,868	217,294,816	223,120,592	135,929,341

Thus the exports of this year have never been equaled, though but a trifle greater than those of 1873. Compared with last year the increase is 2 1/2 per cent. The total weight of this year's exports is about 726,000 tons, making it one of the heaviest of our exports, exceeded only by wheat, probably.

Cotton Movement.

The receipts and exports from Sept. 1 to Dec. 3 were:

	1875.	1874.	1873.	1872.
Receipts.....	1,590,985	1,457,006	1,337,379	9.2
Exports.....	815,488	709,030	106,458	15.0

Railroad Earnings.

The following are from reports made to the Massachusetts Railroad Commission for the year ending Sept. 30, 1875:

	Earnings.	Expenses.	Net earn.	P. c.
Eastern.....	\$2,827,290	\$2,069,872	\$757,419	26.8
Fitchburg.....	1,729,526	1,326,502	403,024	23.3

Other earnings have been reported as follows:

Year ending Sept 30:

	1874-75.	1873-74.	Inc. or Dec.	P. c.
Providence & Springfield.....	\$87,952	\$74,004	Inc. 13,948	18.8
Expenses.....	42,886	47,369	Dec. 4,483	9.5

	1875.	1874.	Inc. or Dec.	P. c.
Net earnings.....	\$45,066	\$26,635	Inc. 18,431	69.3
Earnings per mile.....	5,998	5,864	Inc. 134	2.3
Per cent. of expenses.....	45.76	64.01	Dec. 18.25	28.8
Valley of Virginia.....	27,395	.....	.....	.....
Expenses.....	33,104	.....	.....	.....

	1875.	1874.	Inc. or Dec.	P. c.
Deficit.....	\$5,709	.....	.....	.....
Earnings per mile.....	1,054	.....	.....	.....
Per cent. of expenses.....	130.82	.....	.....	.....

Eleven months ending Nov. 30:

	1875.	1874.	Inc. or Dec.	P. c.
Illinois Central.....	\$7,239,008	\$7,230,285	Inc. 8,723	0.3
St. Louis, Iron Mt. & So.....	3,307,424	2,894,466	Inc. 412,958	14.3
St. Louis, Kan. City & No.....	2,367,025	2,387,060	Dec. 20,035	1.3
Central Pacific.....	\$15,594,183	\$13,182,479	Inc. \$2,411,704	18.6

Ten months ending Oct. 31:

	1875.	1874.	Inc. or Dec.	P. c.
St. Paul & Sioux City.....	\$651,139	\$694,742	Dec. 43,603	6.3
Month of October:				
Cairo & St. Louis.....	\$31,213	.....	.....	.....
Expenses.....	23,419	.....	.....	.....

	1875.	1874.	Inc. or Dec.	P. c.
Net earnings.....	\$7,794	.....	.....	.....
Per cent. of expenses.....	75.02	.....	.....	.....

	1875.	1874.	Inc. or Dec.	P. c.
Houston & Texas Central.....	\$407,435	\$311,101	Inc. 96,334	31.0
Leavenworth, Lawrence & Galveston.....	38,321	33,187	Inc. 5,134	15.5
Expenses.....	16,481	17,601	Dec. 1,120	6.4

	1875.	1874.	Inc. or Dec.	P. c.
Net earnings.....	\$21,840	\$15,586	Inc. 6,254	40.1
Per cent. of expenses.....	43	53	Dec. 10	18.9
St. Paul & Sioux City.....	117,945	90,923	Inc. 26,992	29.7
Toronto, Grey & Bruce.....	37,536	34,748	Inc. 2,788	8.0

Month of November:

	1875.	1874.	Inc. or Dec.	P. c.
Burlington, Cedar Rapids & Minnesota.....	\$127,879	\$101,187	Inc. 26,692	26.4
Central Pacific.....	1,598,000	1,381,745	Inc. 216,255	15.6

	1875.	1874.	Inc. or Dec.	P. c.
Illinois Central.....	1,219,225	1,065,736	Inc. 153,489	14.4
St. Louis, Iron Mt. & So.....	787,854	668,943	Inc. 118,911	17.8
St. Louis, Kan. City & No.....	337,286	300,877	Inc. 36,409	8.8

	1875.	1874.	Inc. or Dec.	P. c.
Southern.....	434,000	397,442	Inc. 36,558	28.5
St. Louis, Kansas City & Northern.....	230,626	251,176	Dec. 20,550	8.2

Three weeks in November:

	1875.	1874.	Inc. or Dec.	P. c.
Canada Southern.....	\$105,102	\$72,830	Inc. 32,272	44.3
Cairo & St. Louis.....	22,193	.....	.....	.....
Chicago, Milwaukee & St. Paul.....	659,000	516,400	Inc. 142,600	27.4
Michigan Central.....	398,110	401,903	Dec. 3,793	0.9

Week ending Nov. 12:

	1875.	1874.	Inc. or Dec.	P. c.
Great Western.....	\$18,020	\$19,489	Dec. 1,469	7.5

Week ending Nov. 13:

	1875.	1874.	Inc. or Dec.	P. c.
Grand Trunk.....	\$45,800	\$45,400	Inc. 400	0.4

Week ending Nov. 19:

	1875.	1874.	Inc. or Dec.	P. c.
Great Western.....	\$16,410	\$19,767	Dec. 3,357	17.0

Week ending Nov. 20:

	1875.	1874.	Inc. or Dec.	P. c.
Grand Trunk.....	\$44,400	\$49,200	Dec. 4,800	9.8

Central Pacific earnings are compared with 1873, as follows:

	1875.	1873.	Inc. or Dec.	P. c.
Month of November.....	\$1,598,000	\$1,238,751	\$359,249	30.0
Eleven months ending Nov. 30.....	15,594,183	12,903,027	2,691,156	21.8

Erie Canal Traffic.

The traffic of the Erie Canal at Buffalo from the opening up to Nov. 30 was as follows:

vi.2	Ocean Freight.
v. 30	Dec. 7 grain was contracted for from New York to Live



Published Every Saturday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

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Editorial Announcements.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THE EASTERN RAILROAD.

For the year ending with September, 1865, the Eastern Railroad Company paid a 6 per cent. dividend; then for seven years without interruption it paid 8 per cent. Since 1872 it has paid nothing, and stock sold at 128 that year was quoted at 10½ to 11 in Boston last Tuesday.

On the 27th of August, 1871, the terrible Revere collision occurred on this road, and this event, which cost the company directly more than a year's dividends, formed an era in the management of the company. Apparently its whole energy thereafter was directed to improving its road, equipment and methods of conducting its business, aiming to afford the best facilities to its customers without much apparent concern as to the immediate returns to the proprietors of the road. This period, however, was signalized by combinations with and leases of connecting roads, which, whatever the convenience therefrom resulting to the public, were primarily intended, doubtless, to concentrate on the Eastern Railroad the traffic between Boston and the country north and northeast of it.

By the report to the Massachusetts Railroad Commission for the year ending with September, 1871, the capital account of the company amounted to \$8,481,080, and it owned 98.64 miles of railroad, 23.75 miles of which had a double track and had as equipment 55 locomotives, 13 snow plows, 94 passenger cars, 27 mail and baggage cars, 471 8-wheel and 368 4-wheel freight cars, and 150 "other" cars. This was the property represented by the company's capital, which was at the rate of \$85,980 per mile of road. At that time the only leased line worked by the company was the 16.55 miles of the Eastern Railroad of New Hampshire, but there was an arrangement by which its trains were hauled over the Portland, Saco & Portsmouth road between Portsmouth and Portland, so that it formed an effective route between Boston and Portland.

By the report for the year ending with last September, the company is shown to have a capital account of \$18,188,534, while it owns 117.986 miles of road, 34.106 having a double track, 95 locomotives, 27 snow plows, 143 passenger cars, 36 mail and baggage cars, and 1,234 freight cars; and besides this road and equipment has \$1,586,960 invested in lands in Massachusetts, and \$2,325,729 in the stocks, bonds and other obligations of other railroad companies, chiefly the Maine Central and the Portsmouth, Great Falls & Conway, which are substantially controlled by it.

Let us put these items from the two reports opposite each other, that we may compare them:

	YEAR ENDING SEPT. 30.		
	1871.	1875.	Increase.
Miles of road owned.....	98.64	117.99	19.35
Miles of double track.....	23.75	34.11	10.36
Locomotives.....	55	95	40
Snow plows.....	13	27	14
Passenger cars.....	94	143	49
Mail and baggage cars.....	27	36	9
Freight cars.....	969	1,234	265
Investments in other roads.....		\$2,325,729	\$2,325,729
Capital stock.....	\$4,262,600	\$4,997,600	\$735,000
Funded debt.....	2,987,400	11,367,948	8,380,548
Floating debt, incurred for additions to property.....	1,139,327	1,822,986	683,659
T'al cap'l stock and d'bits.....	\$8,389,327	\$18,188,534	\$9,799,207

Thus the company's property, increased as we see by the 19 miles of new road and 10 miles of second track and the items of equipment noted (and also by large land purchases in Boston which do not appear in this list), and also by the holdings of other railroad securities, appears to have represented \$9,800,000 more last September than it did four years before, though the addition to mileage is but 20 per cent., to motive power, 73 per cent., to passenger cars, 52 per cent., and to freight cars, 25 per cent.

The company's equipment in 1871 was valued at \$1,490,699; in 1875, at \$2,362,675, so of the addition to capital \$871,976 is all that has gone for equipment. The balance of \$8,928,000, then, is represented by the 19.35 miles of new road, the 10.36 miles of additional second track, the improvements that may have been made in the general character of the road and equipment, the purchases of lands, and the investments in the stocks and bonds of connecting roads. The average amount of capital per mile of road owned was \$85,980 in 1871, and \$154,140 in 1875, and if we subtract from the capital the investments in other railroads, the amount per mile this year is still \$134,430.

An examination of the reports for the two years will show how much each item of the construction accounts has increased within the four years. Below we have consolidated the items, as follows:

	1871.	1875.
Road, buildings, etc.....	\$8,928,924 05	\$12,362,111 84
Rolling stock.....	1,218,508 55	2,362,674 72
Lands and other terminal property not included with stations.....	146,250 00	1,625,849 84
Investments in other railroad companies.....	268,200 00	2,286,838 93
	\$8,562,182 60	\$18,637,475 33

Thus in the first item we have an increase of \$5,433,800, and the amount of this account has increased from \$70,245 to \$104,763 per mile of road, and from \$56,613 to \$81,276 per mile of track. This increase of \$24,663 per mile of track certainly should have sufficed to put a very bad road into very good condition. It has been kept in excellent condition, we believe, yet the facts remain that there is an increase of but 10½ miles in double track, and only 68 miles are laid with steel.

The increase in the rolling stock account seems reasonable, especially as the increase in the numbers of cars and engines probably does not fully represent the increase in capacity and value. Elsewhere old locomotives have usually been replaced by more powerful ones and old coaches by more elegant and costly ones, and this has probably been the case on the Eastern, which reported an unusually light freight stock in 1871, a large number of the cars being four-wheeled, and the eight-wheeled cars weighing but 7½ tons each.

The land investments we do not fully understand, as they seem not to be included with the property used in conducting the business of the road. It seems remarkable that so large investments in land not needed immediately should have been made by a company in the financial condition of the Eastern.

As to the investments in other railroads, they must be judged by their results; and the results it is not always possible to estimate exactly. The direct income reported from all the company's \$2,275,000 of stocks and bonds was but \$4,680 in 1874-75, and that came not from a railroad, but from the Pullman Palace Car Company. But it has sometimes been advisable to expend large sums for the control of an unprofitable line for the sake of the profit on the traffic contributed by it to the old road, which otherwise a competitor would get, wholly or in part. Some Western roads have had the diversion of the most important part of their traffic threatened by the construction of new lines likely to be used in the interest of a rival road; and have been in a manner compelled to support a large mileage which they did not want, to prevent a worse evil. In the case of the Eastern, however, the Commissioners' report enables us to know the amount of earnings on the traffic contributed by connecting roads." It was:

	1871.	1875.
From passengers.....	\$141,092 10	\$197,089 22
From freight.....	131,821 61	264,371 97
Total.....	\$272,913 71	\$461,461 19
Increase since 1871.....		188,547 48
Percentage of total receipts.....	14½	16½

This traffic is mostly through, and the average rates on it are less than those on other traffic, so that we may assume that the proportion of profit was less than that of receipts from this business. But with the average rate of profit of the road's entire traffic for the year, the net income from this traffic was but about \$116,000 last year,

against \$92,790 in 1871. Of course only part of this traffic came from the roads in which the company has made investments.

The improvements of the company's road have been effective so far as they have secured two things—a lower cost and a better quality of transportation. The latter, by general consent, seems to have been attained. The road has apparently done excellent work since the Revere accident and has given to the public pretty nearly all the accommodations that the present state of the art of railroad affords. As to the expense, we shall see.

For the last year the receipt, expenditure and profit per unit of traffic, were, in cents:

	Receipt.	Expense.	Profit.
Per passenger mile.....	2.347	1.735	0.612
Per ton mile.....	2.783	2.144	0.639

In 1871 these amounts were:

	Receipt.	Expense.	Profit.
Per passenger mile.....	2.118	1.399	0.719
Per ton mile.....	4.800	3.168	1.632

For 1871, expenses are not reported separately for freight and passenger traffic, and the amount of expense is given on the assumption that the proportion was the same for both passengers and freight. It will be seen that the expense per passenger mile has not decreased in consequence of the improvements, but has increased 24 per cent. The expense per ton per mile has decreased nearly one-third. This road, however, is essentially a passenger line. The result of the last year's business, if the expenses on each branch of traffic had been the same as in 1871, would have been:

An decrease in passenger expenses of.....	\$313,125
A increase in freight expenses of.....	365,438

A increase in total traffic expenses of..... \$52,313

That is, at the expense per unit of traffic which prevailed in 1871, the road's working expenses would have been \$2,122,180 last year, instead of \$2,069,870, as they really were.

This, in view of the lower prices of these times, does not indicate that the company has secured a more economical conduct of its traffic by the improvements that have cost it so many millions. However, the bulk of traffic as well as the condition of road and appliances has a great influence on the average expense per unit of traffic, and we will do well to consider that. Additions of traffic due to additions to the extent of road do not necessarily lead to economy in working, so we will compare the amounts of traffic per mile of road for the two years. These were:

	1871.	1875.
Passenger mileage per mile of road.....	520,352	267,622
Tonnage mileage per mile of road.....	88,592	137,001

The increase in the mileage worked (amounting to 166 miles) has thus brought about a decrease in the average amount of passenger traffic per mile of nearly one half, and an increase of 43½ per cent. in freight traffic, which is in accordance with the increase and decrease of expenses.

That there has been a large decrease in the rate received, amounting to nearly 11 per cent. per passenger mile and to 43 per cent. per ton per mile, was doubtless beyond the company's power to prevent. This has caused the rate of profit per unit of traffic to fall 17½ per cent. on passengers and 66½ per cent. on freight.

Though the decrease in the average rates received probably could not have been prevented, still the managers of the company ought not to have assumed that the rates would not be reduced, and based a costly policy of securing tributary traffic on that assumption. If, however, rates had been in 1875 the same as in 1871, the addition to the company's net profits would have been:

From passengers.....	\$194,181
From freight.....	427,023
Total.....	\$621,204

This amount is equivalent to 6½ per cent. on the addition to the company's capital. It would have made last year's net earnings \$1,378,623, which is \$285,345 more than the interest charge and rentals for that year, and sufficient for a dividend of 5.7 per cent. on the company's stock.

Thus, apparently, nothing less than the average rates of the year of the Revere accident would have sufficed to pay the most moderate interest on the capital invested by the Eastern Railroad Company since that event.

In view of the great change in the position of the company, or at least in the general estimate of its position, it seems strange that there has not been heretofore a thorough investigation of its affairs during the period since the Revere accident. The company's stockholders ought to know definitely what has been done with the millions of new capital invested—just what has been bought with it, and just what was paid for everything that was bought. The increase in capital, making allowance for mistakes in judgment in some of the large investments, seems out of proportion to the increase in the value of the property as it appears by the reports.

Record of New Railroad Construction.

This number of the Railroad Gazette has information of the laying of track on new railroads as follows:

Arcootook.—Completed from the New Brunswick line west to Fort Fairfield, Me., 6 miles. It is leased to the New Brunswick

Railway Company, forming part of its Fort Fairfield Branch. Springfield & New London.—Completed from Springfield, Mass., south by east to the Connecticut State line, 7 miles. Gloversville & Northville.—Extended to Northville, N. Y., 2 miles, completing the road, which is 16 miles long. Sharon.—Completed from Sharon, Pa., northward to the Atlantic & Great Western at Cape Horn, 8 miles. Atlantic & Gulf.—The Junction Branch is completed from the main line, two miles from Savannah, northward to the Savannah & Charleston road, 4 miles. This is a total of 26 miles of new railroad, making 1,176 miles completed in the United States in 1875, against 1,731 miles reported for the same period in 1875, 3,456 miles in 1873, and 6,559 in 1872.

AN ERIE REORGANIZATION SCHEME proposed by Mr. John C. Conybeare, an English bondholder, proposes to assess \$11 per share on the preferred and \$9 on the common stock, payment of which shall not be compulsory, but shall have the effect of giving the stock which does pay a claim to dividends before anything can be divided to that which does not pay. Thus the present preferred stock on which an assessment of \$11 was paid would become "preference A" shares, entitled to 7 per cent. dividends before anything was paid to the non-contributing preference shares, which would become "preference B" shares. The common stock on which \$9 per share was paid would become 4 per cent. preference shares, ranking after the present preference shares, but entitled to 4 per cent. dividends before anything is paid on the common stock which has not made such a contribution. Besides these contributions from the stockholders, Mr. Conybeare would have the first consolidated and the sterling bondholders of 1865 accept 1 or 2 per cent. of their 7 per cent. interest in bonds, secured perhaps by the coal property of the company; while the second consolidated and the quarterly convertible gold bonds should receive 4 per cent. in gold and 3 per cent. in a new pre-preference 8 per cent. stock.

This arrangement would give five classes of stock and add a new class of bonds. This would not be a serious objection if it should secure the needed capital. If all the stock should pay the assessments, the amount contributed would be about \$8,000,000, besides that yielded by the temporary reduction of interest on bonds. But in this case, the payment of a contribution would not be a measure of self-preservation, and there can be no doubt that a large proportion of the stock would not pay but would accept its lower position. Then the company might not get any considerable amount of capital after all, except that accruing from the non-payment of interest on bonds. Should all the stockholders refuse to contribute, their position would remain unchanged, except that the bondholders would have a prior claim for the interest and dividends on the bonds and pre-preference stock accepted by them for part of their interest. Nothing less than the prospect of certain annihilation of their shares is likely to draw money from the stockholders.

A CRITICISM OF THE BLOCK SYSTEM is ventured by a contemporary in calling attention to an accident caused in England by lightning, which lowered a semaphore signal to "line clear" "by the neutralization of the battery current by the electricity in the atmosphere, so as to allow the arm to drop. The train was then ordered forward, the line being supposed to be clear. A short distance ahead, however, another train was encountered, and a collision resulted."

In commenting on this the journal in question says: "Many persons unacquainted with the working of these systems think them the panacea for all the ills of train dispatching, but in view of the enormous expense involved, and the delays and annoyances occasioned, we do not think it entitled to any considerable amount of praise, at least, not in its present form."

Some readers will probably feel inclined to ask what the "present form" of the block system is. The block system exists, in fact, in many forms, the essential principle being that whatever means are employed to effect it, there shall be an interval of space maintained between trains. It is this principle which is, not "a panacea," but an absolute preventive of collisions, to the extent to which it is applied, because obviously two trains cannot come into collision if there is an interval of space between them. The means of effecting this may of course have defects, as probably was the case in the instance referred to; but to object to the block system because a signal was effected by atmospheric electricity is like saying that because a barn was struck by lightning barns are not "entitled to any considerable amount of praise, at least not in their present form."

NEW YORK GRAIN EXPORTS, for the eleven months ending with November last, were about 37,561,000 bushels, against 51,809,000 last year—a very large decrease, and considerably greater than its proportion of the decrease in the grain traffic of the country. The receipts at Northwestern shipping ports, for example, have decreased but about 12½ per cent., while New York exports fell off 27½ per cent. This, however, must always be the case when there is not a large export demand. New York has not quite held its own as an exporter this year, other ports having suffered less in proportion than it, from the decrease in business.

MR. CHARLES BLACKER VIGNOLES, Past President of the Institution of Civil Engineers, died Nov. 17, at his residence in Southampton, aged 84 years. Mr. Vignoles, who sprang from a French Huguenot family, was Irish by birth. He was educated under the charge of his grandfather, Dr. Hutton, the eminent mathematician, and served in the British army in the Peninsular campaign and at Waterloo. After the war he came to America hoping to recover large land grants in Florida, made to his family when it was British territory. He made surveys there and in South Carolina, but soon returned to England, where he early became interested in the earliest railroads, made one of the surveys for the Liverpool & Man-

chester line, and became identified with the new industry of railroad construction at the time when George Stephenson, who was but a few years his senior, was at the height of fame. Vignoles' familiarity with French led to his engagement in many important enterprises in that country, and elsewhere on the Continent. His name, however, is probably best known in connection with the prevailing flat-footed rail, which, as has recently been proved, was really the invention of the American John G. Stevens, but is still called the Vignoles rail in Europe.

BARON VON WEBER, of Vienna, requests us, in his name, to return his thanks to the several railroad officers and manufacturers of railroad rolling stock, etc., who have sent him, through this office, material to assist him in studies for new works on the "History of Locomotive Engineering," and "Safety in Working Railroads," which he is preparing. He writes that this material will be of great value to him, and he would desire to thank each donor individually; but their number makes this impracticable.

A Journey Westward.

IV.

ALTOONA.

In describing the shops, the organization and the method of conducting the machinery department of a great road like the Pennsylvania, in a few letters like these, the great difficulty is, that the writer is apt to be overwhelmed with the amount of material supplied. To describe the shops alone and their equipment would make a good-sized volume, and a very respectable treatise could be written descriptive of the rolling stock of this line. The reader must therefore not expect anything more than mere notes of such facts as attracted attention during a brief visit.

The locomotives on this road have, during the past ten years or more, been reduced to a tolerably complete system, and the different parts have to a very great extent been reduced to standard forms and proportions. The United States standard for screw threads has been adopted more generally and more completely than on any other road. The word "completely" is used because on many roads the system has been adopted in part only, simply because those in authority have not known what are the peculiarities of the standard screw threads. It may be repeated here, for about the dozenth time in these pages, that, in order to conform to this standard, screws must not only have the required number of threads to the inch, but must be of the prescribed form. Unless they are, good workmanship is impossible.

The authorities of the Pennsylvania Railroad, some years ago, adopted a standard car axle, which is now in very extensive use. It is believed by the writer that the standard adopted was unfortunately too small for the requirements of the present day; but owing to the extent to which it is used, and to the fact that it has worked very successfully, the same standard is still adhered to; but doubtless if the question came up now there would be a strong disposition to select a larger-sized axle than that now in use on the Pennsylvania road. Steel axles are extensively used, but the writer was unable to get any very definite data concerning their use. Some of the attaches of the machinery department are, however, engaged in collecting statistics concerning their use, which will doubtless be made public when completed, and will be more reliable than any inferences drawn from mere report or observation. Steel axles for passenger cars are subjected to a test of five blows of a weight of 1,640 pounds falling 25 feet. The axles are reversed after each blow, so that they are bent back and forth alternately. Iron freight-car axles are subjected to the same test, except that the weight is allowed to fall 20 feet instead of 25. A careful record is kept of all such tests on suitable blanks printed for the purpose.

LOCOMOTIVES.

All the leading types of locomotives used in this country are employed on this road. For passenger trains the ordinary eight-wheeled "American" engine is used; for freight, ten-wheeled engines—that is, with six driving-wheels, and a four-wheeled truck. Mogul engines and Consolidation engines, of which latter an engraving was published a few weeks ago, are all used. One peculiarity in the practice of this road is the use of water grates for both anthracite and bituminous coal. For the latter purpose, it seems very doubtful whether they can be economical. The grates are composed of wrought-iron pipes two inches in diameter with ½ inch space between. The whole bottom of the fire-box is occupied by this grate, none of it being covered with dead plates. The result is that, owing to the wide spaces between the grate bars, it is necessary to carry a very thick fire in order to prevent its being torn to pieces by the blast, and also to keep the fine coal from falling through. As much injury may be done from the admission of too much air to the fire as by admitting too little, and the maximum economy only attends that practice which permits the admission of just the proper quantity. Now with so large spaces between the grate bars, occupying so much surface, there is sure to be so great an admission of air as to reduce the temperature of the fire and the products of combustion below that of its maximum efficiency, unless the layer of coal on the grates is very thick, in which case it is extremely difficult to regulate the amount of air which passes through the fire. It is often forgotten that intensity of combustion is as important as a large amount of combustion. The quantity of heat transmitted to the water in the boiler is in proportion to the difference in the temperatures of the gases and the water, and also to the time the former are in contact with the heating surfaces. Now with an intense fire the difference in temperature is of course greater than if combustion takes place at a lower heat, and as the quantity of the gases to produce a given amount of heat will then be less, they need not move through the tubes so rapidly, so that the time of their contact with the

heating surfaces is greater. Besides these advantages, with an intense combustion it is much more certain that the temperature in the fire-box will keep the escaping gases ignited than would be the case if the combustion was less intense. For these reasons it seems doubtful whether water grates will give as good results as can be obtained with cast or wrought-iron grate bars with finer interstices, and with a portion covered with dead plates.

SYSTEM OF PAYING LOCOMOTIVE-RUNNERS.

The basis which should determine the amount of pay of locomotive-runners has been a subject of much discussion, contention and experiment on many roads. It is undoubtedly very unjust to make the pay dependent solely on the time occupied. When that is done, careless and unskillful men are paid as much as the most diligent and experienced. In the one case the service rendered is of much more value to a railroad company than in the other. A locomotive-runner who, by skill and care, saves 10 per cent. or more in fuel, ought in justice to be paid more than one who wastes an equal proportion. Various systems of paying premiums and of giving a portion of the fuel, oil and waste saved to the runner and fireman have been devised and tried. The adoption of some contract system by which the men should be paid a certain sum per car per mile for the cars hauled, and they be charged with the fuel, oil and waste, has been proposed several times in these pages. That such a system would result in very great economy to railroad companies and also in profit to the men seems certain, if the practical difficulties in the way of adopting it could be overcome. The latter have been regarded as very formidable by a number of experienced railroad men, so much so that none could be found willing to put it into practice. It was, therefore, with some pleasure that it was learned a short time ago that this system in a modified form had been put into practice on the Pennsylvania Railroad. The system at present employed was described in the *Railroad Gazette* of October 9. It is briefly this: A limit is fixed for the number of pounds of coal which should be burned per car per mile. To quote the language at the head of the blank referring to this subject, "Premiums will be paid for the month of November, 1875, to all engineers and firemen whose fuel account per car per mile is reduced to the limit fixed below." Then follows a long list of different trains, of which the mileage per round trip, the limit of pounds of coal per car per mile and the amount of the premiums per round trip for the engineer and for the fireman are given. The following are fair examples selected from the list:

West End.	Mileage per round trip.	Limit lbs. coal per car per mile.	Premiums per round trip	
			Engineer.	Fireman.
Atlantic Express and Fast Line.....	236	5.3	33	22
Day Express and Limited mail.....	236	6.6	33	22
Mail.....	236	7.2	33	22
Walls Accommodation.....	31	9.2	04	02
Connellsville Accommodation.....	48	11.7	06	04
Express and through Freight.....	162	3.4	37	25
Philadelphia Stock.....	162	3.0	37	25

The advantages of this system are that each man derives an immediate advantage from his own care and skill, whereas if a few monthly premiums are paid, the reward is too remote, and in the majority of cases impossible of attainment; so that the competition is soon narrowed down to a few of the best men and of the best engines. Now premiums of this kind should be, like the meetings of Moody and Sankey, intended to arouse the sinners, and not the best runners, whether of the race of life or of locomotives. The good men render fair service at all times, but the ignorant, careless and unskillful need encouragement and some direct incentive to do better. It is believed that this system of paying men is admirably adapted to accomplish that end. It of course has its defects, which must be watched and remedied if possible; and in order to do this, monthly schedules of premiums are made out, in which the rates are modified as experience may indicate to be necessary. It is, as far as could be learned, popular with the men, although some difficulties arise, as would be the case with any system: as, for example, on the Mountain Division of the road, where two engines are employed in ascending the grade, a frequent complaint from men who do not get premiums is, that they pulled more than their proportion of the train, whereas the other runner shut off steam in order to save coal. The plan is thought to be capable of further application, so as to include the consumption of oil and waste; but doubtless it is wisest to perfect it gradually and determine the inherent difficulties which attend it, by extended practical experience. It may be foreseen that if it should work successfully, and the men make more money where it is adopted than they did before, the class of people who always feel injured when any one else is benefited will immediately lift up their voices in opposition to it, and try to defeat it. Under its provisions the men are able to earn from five to seven dollars per month more than under the old system. The company, it is believed, is profited a good deal more than that amount. A still more just way would be to pay men a certain rate per car per mile for hauling cars, and then charge them with the coal, oil and waste consumed. This would give each man the benefit of all the advantage he could gain by exercising care and skill. In any system of this kind, it is necessary to keep an account of the car mileage. On the Pennsylvania Railroad the exact mileage is kept of each passenger car, but not of each individual freight car. An account is kept of the number of cars hauled in each train, but no record is made of the numbers by which each of the cars is designated.

FIRE-BRICK ARCHES.

On nearly all of the passenger engines on the Pennsylvania

road fire-brick arches, or rather deflectors, are used. These are constructed somewhat differently from those ordinarily used. Instead of being arched and resting on abutments on the sides of the fire-box, they are supported on bent water tubes, which are attached to the tube-sheet below the fire tubes and to the crown sheet near its back end. The fire-bricks are laid on top of these tubes. The latter are protected from the action of the fire by the circulation of water through them. As it is expected that an illustration of this device will soon be published in these pages, further description will be reserved until then. Although so extensively used on this line, it is very little known elsewhere.

INSPECTION OF LOCOMOTIVES.

A very excellent system of inspecting locomotives, especially of the condition of the fire-boxes and stay bolts, is employed on this road. Each engine is carefully examined periodically, and the condition of the fire-box, stay-bolts, flues and water grates is reported on a blank prepared for that purpose. There is nothing about locomotives so often criminally neglected as the condition of the stay-bolts, and it may be safely asserted that hundreds of locomotives are running to-day with so many of the stay-bolts broken that it is a subject of wonder, not that we hear of an occasional explosion, but that there is not an epidemic of such accidents.

The manner of testing the stay-bolts is by their sound on being struck with a hammer. A man on the outside holds a sledge against the bolt, and the inspector inside strikes them with a light hammer. A skillful person can, it is said, detect in a moment whether the bolt is broken or not; but, quite curiously, so delicate must be the perception of sound, that it is but rarely that a man can be found who can be relied upon for doing this work, and it is usually only by trying a large number of men that a competent inspector can be found. The systematic examination of boilers cannot, however, be too highly recommended, as the position of a man sitting on a barrel of gunpowder with a lighted match is to be envied in comparison with that of the runners and firemen of some locomotives running and under the charge of master mechanics who would feel like injured innocence if told that their carelessness is or ought to be criminal.

Another admirable system in vogue in the engine houses on this line is that of making a special inspection of the spark-arresters, ash-pans and air brakes of each engine each time it comes into the house. Reports are made of these inspections, so that in case any of the parts named are not in good condition, the responsibility can be traced to the right source.

Every locomotive runner, or person placed in charge of an engine, when it is placed under his control is also obliged to fill out a list of the tools, etc., on the engine. The list of articles contained in his blank was printed with the other description in the *Railroad Gazette* of October 9.

A report of this kind of course inspires a rigid responsibility in the persons in charge of the engine, and makes it possible to trace out the responsibility for the loss or destruction of any of the articles named.

PRACTICAL RESULTS OF SYSTEMATIC MANAGEMENT.

It is of course very probable that some persons will say that it is possible to carry systematic management or "red tape," as those who are not systematic are apt to call it, too far; so that the system instead of being a help may be a burden, and may itself cost more than it saves, which hypothetical statement may of course under some circumstances be true. To show, however, what may be done when railroad machinery is reduced to standard forms and sizes, the following case reported to the writer by a foreman of one of the engine houses will show. Engine 515, in coming down the mountain grade, broke the tender brake so that the runner was obliged to reverse the engine, and, by doing so, broke one front cylinder head, two steam-chests and covers, two steam-chest casings and casing covers, one set of steam-chest studs, one piston head and packing, two head-lamp brackets and demolished the pilot. All these parts had to be replaced. In four hours after the accident occurred, the engine was in the shop, and five men—two mechanics and three laborers—were at work on it. Besides replacing the broken parts, they did the following work: bushed one piston gland and stuffing-box, put new truck underframes, straightened smoke-box and pilot, put new wedge castings and bolts between tank and engine, ground in throttle-valve, faced front joint on left cylinder, repaired copper branch pipe, overhauled cylinder cock rigging, put in two new tender-truck boxes, two tender-truck column bolts and castings, and one truss plate for back tender-truck, straightened one tender-truck frame and patched smoke stack. In sixteen hours after commencing work the engine was ready for service. Spare parts were of course ready to replace those which were destroyed, but without some system of standards such work would be impossible.

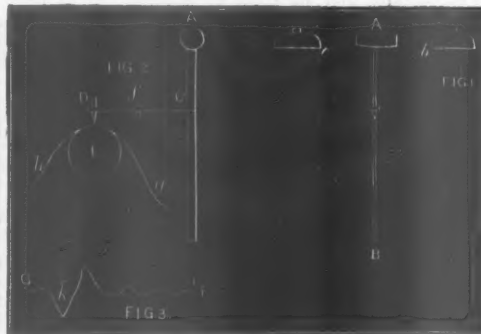
THE TRACK.

In no department, however, has so rigid a system of inspection been enforced and is so much care exercised on this road as in the maintenance of the track. Annual premiums are paid to the section-men for the best track, and an annual inspection is made, usually by all the principal officers of the road. The writer happened to be at Altoona the week when the annual inspection was made. This is done by first running over the entire line at a high speed, to observe the "surface" of the track, and afterwards at a slow speed, to observe the condition of the ballast, ditches, culverts, joints, etc. Those engaged in the inspection are provided with blanks, in which each one enters marks and memoranda of what he has observed. From these notes the final decision is collated.

This year the officers of the line undertook the unexampled feat of running from New York to Pittsburgh, a distance of 444 miles, without stopping. In order to do this, an engine and special cars were provided, or rather prepared, for the journey. One of the great difficulties was to provide enough water and fuel. The road has now four or five water troughs from which a supply of water can be taken while running. These troughs,

however, were laid only to supply water between two stopping points, such as Harrisburg and Altoona, where all other trains stop and take a supply of water from ordinary tanks. If a train does not stop at these points, of course a larger supply is necessary. To meet this, a baggage car was provided with a large wooden tank, which was filled with water before starting and had a hose communication with the boiler tank. This additional supply, with that which could be taken from the troughs, it was thought, would be sufficient for the whole run, as it doubtless would have been. Bags of coal were also carried in the baggage car. The engine was fitted with oil tubes which led to the eccentrics and axle boxes, so that they could be oiled while running, and large oil cups were attached to the connecting rods. The cars had doors cut in the floor, so that their boxes also could be oiled while running, and from the outside of the car. Four locomotive runners and firemen, one from each division of the road, were taken on the train, so that they could relieve each other. The arrangements were all admirably made, and although there were many contingencies to encounter the feat might have been successfully accomplished had it not been for a very melancholy accident which occurred near Pomeroy Station, on the Eastern Division of the road. At that point Mr. Charles S. Douglas, an assistant road foreman, was leaning from one of the cars, attempting to oil the journal boxes, when he struck a platform alongside of the road, and was instantly killed. This sad occurrence of course made it necessary to stop the train and to abandon the original intention. Mr. Douglas was a young man from Canada, and had formerly been engaged in the drawing room at Altoona. He belonged to the class of educated young men, who have within the last few years been placed on this road in positions which give them opportunities for acquiring the skill and knowledge which are so much needed in the management of railroads. The sad event threw a gloom over the whole road, especially among his companions, and made what is usually an annual jubilee a period of sorrow and mourning.

Heretofore the condition of the surface of the road has been determined by personal observation alone, but this year an attempt was made to devise an instrument which would record, automatically, the "bad places" on the line. The principal parts of this instrument are represented in the sketches herewith, which were made from memory alone. Fig. 1 is an end



and Fig. 2 a side view. It consisted, in the first place, of a weight, *A*, like a hammer-head, attached to a steel spring, *A B*. This spring was firmly attached at the lower end, *B*, on the rear platform of the inspection car, so that the weight could vibrate crosswise of the car. Any sudden lurch of the car would, of course, cause it to vibrate in the path of the dotted lines *c b*. On each side of the weight, gongs, *c* and *b*, were placed, so that when the weight vibrated far enough it would strike the gong, and thus indicate a bad joint or defective track. Besides this arrangement a horizontal arm, *C D*, fig. 2, was connected with the spring *A B* at *C*. This arm was pivoted at its center, *F*, and a pencil, *D*, attached to the other end. The vibration of the weight and spring would thus of course cause the pencil *D* to vibrate at the same time. Underneath the pencil was a slip of paper, *g h*, was made to move at a regular speed by an ordinary telegraph recording instrument, one of the rollers, *E*, of which is shown. The movement of the pencil and that of the paper produced a wavy line resembling that shown at *F G*, fig. 3. If the track is rough, the weight *A* of course vibrates more than if it is smooth, and the motion of the pencil corresponds so as to produce a mark somewhat like that at *k*. If the track is smooth the line becomes almost straight. The first impression is that if a train were running at a high speed, a curve of the track would cause the weight to vibrate violently. This, however, is not the case if the outer rail is elevated sufficiently. The instrument may therefore be employed to determine the amount of elevation of the rails on curves as well as for detecting defects of the joints and road-bed. The arrangement and construction were crude, and considerable experiment yet remains to be made to perfect it. Nevertheless, its action was so successful as to show very clearly its capabilities, and it seems quite certain that it will develop into a very useful instrument, and one of great assistance in scientific railroading. It was designed by Mr. Pitcairn, Superintendent of the Western Division of this line. Numerous other improvements have already been proposed, and doubtless by next year it will be in a condition to be used practically.

The effect of the annual inspection and system of premiums is very apparent on the track of the Pennsylvania road. Its officers may, it is thought, safely challenge comparison with any other line. The ballast, the ditches, rails, joints and every other portion which helps to make up a perfect track are in the very best condition. Of course a line like that of the Pennsylvania road, which runs through a mountainous country, is curved almost continuously from one

end to the other, has to encounter steep grades and run on the edges of high precipices must, in order to secure as great a degree of safety as that which exists on a straighter and more level road, keep its track in more thorough repair. That such a road as the Pennsylvania line may, however, be made as safe as other lines is, it is thought, indicated by the present condition of its track, and will be apparent if it is remembered that a railroad on the edge of a precipice is more safe, if its track is in such a condition that trains are in no danger of running off, than one on a level plain which is so rough that the trains will not stay on. In other words, most people would rather trust themselves in a train on the edge of a precipice which will not run off the track than in one on level ground which will. At any rate, the writer felt that assurance in his journey from Altoona to Pittsburgh in a Pullman parlor car which, on the track referred to, seemed to reduce travel to the poetry of motion, or at least gave the very prosaic writer some sensations which to his dull perception of such things seemed to be poetic.

NEW PUBLICATIONS.

A General Classification of Hand-Made Drawings and Printed Maps, Surveys and Views, Appertaining to the Railway Service, is the title of a pamphlet of about 40 octavo pages prepared by Col. George T. Balch, in connection with the inventory of the Erie Company's property, and, as the title page says, "designed to facilitate the work of taking an accurate inventory of such property." The justification of such a classification and inventory is found in the fact that drawings, as Colonel Balch says in his preface, "represent the studies and accumulated experience of the engineering and mechanical talent employed by the company for twenty-five years or more, that of the 6,000 sheets owned by this company no complete list of these drawings and maps has ever been prepared." Colonel Balch estimates that these materials on the Erie represent an expenditure of about \$75,000, and says that "on one alone a skilled draftsman spent ten of the best years of his life."

Probably there are hardly any other objects in the possession of railroad companies which represent in small space so much labor and expense and are more easily or more commonly mislaid or lost than drawings. A large corps of engineers may be employed for years in making surveys of alternative routes, and the result of their labors may be contained in a bundle of papers, easily destroyed and likely in time to be mislaid and lost sight of, unless carefully catalogued and filed. When the Erie was projected, for instance, a great many surveys of routes were made on which no lines were built. Recently, lines have been projected partly or wholly on the routes surveyed thirty and forty years ago, and for lack of the plans and records of the old survey, the work had to be done over again from the very beginning. So with making drawings of machinery, buildings, etc. When wanted—and they are often, long after they are supposed to have served their purpose—frequently they cannot be found; and if there happen to be no examples of the constructions of which they were representations, then it may be necessary not only to make the drawings anew, but calculate and design the constructions over again.

But something more is needed than the existence of drawings to make them useful; they must be accessible. And to be accessible, if there is any considerable collection of them, they must be classified and catalogued. A great collection of drawings is like a library. Imagine the books of the Astor Library thrust on the shelves as they were unpacked, without classification, and you have the condition of too many files of drawings. Imagine further that great collection of books uncatalogued. It would be practically useless. Yet this is the condition of a great many large stocks of drawings and maps.

Now it is true that a classification on paper and a catalogue are not enough to make drawings easily accessible, any more than a library; yet it would preserve information of what was and was not possessed; and knowing that certain material existed in the confused mass, the inquirer could at least search for it with the possibility of finding what he wanted. We heard recently of a company's paying six hundred dollars for making drawings which soon afterwards were found stowed away somewhere; but this is a trifle to what often occurs from the want of knowledge of the material actually on hand, or the failure to preserve what was once created.

It is counted an excellent thing when a single office has its drawings and records so arranged and indexed that one may easily ascertain just what is on hand and easily find any particular sheet after its existence is ascertained; but by the system proposed for the Erie, there will be a complete catalogue of all the company's property of this kind; and the master mechanic at Port Jervis may at any time know what drawings are on hand at any of the other shops, and *vice versa*.

Colonel Balch's classification divides the material into "drawings executed by hand," and "prints, as engravings, lithographs or photographs." The sub-classes are based chiefly on the kinds of property which the drawings represent or to which they belong. Four classes concern real estate, including lands, road-bed, bridges, road fixtures, buildings, etc., and the fifth to the personal property. There are two sections under the latter, I., the general administrative service, and II., the transportation service. Section II. is further subdivided into "Transportation Proper," "Motive Power" and "Maintenance of Way," under each of which there are further divisions.

The whole is intended to accomplish a most essential object—to enable the officers of the company to know what they have got; a thorough cataloguing on this plan will accomplish this. If, then, these materials shall be arranged and kept arranged in an orderly manner, quite as essential an object will be secured—the ability to find what they have got. If the Erie succeeds in doing this, it will be eminent among railroad companies, as those familiar with drawing rooms and engineers' offices know.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

Railway Passenger and Freight Conductors' Mutual Aid and Benefit Association.—At the annual convention in Chicago, Nov. 30, the following officers were elected for the ensuing year: President, J. G. Sherman, Michigan Central; First Vice-President, George Hewitt, Chicago & Northwestern; Second Vice-President, A. N. Putnam, Illinois Central; Secretary and Treasurer, Charles Huntington, Chicago & Alton; directors, George Hewitt, E. A. Sadd, H. S. Evans, Chicago; Theodore Washburn, J. J. Fitzgerald, G. P. Maule, St. Louis; J. Ladd, Detroit; E. D. Latham, Bloomington, Ill.

Atlantic & Pacific Telegraph.—Mr. Charles A. Tinker, late Superintendent of Telegraph of the Vermont Central, has been appointed General Superintendent of this company's lines, in place of E. D. L. Sweet, resigned. Mr. Sweet continues with the company as Second Vice-President.

Hartford, Providence & Fishkill.—The Providence (R. I.) City Council has elected Henry W. Gardner and Earl P. Mason trustees on behalf of this city, in place of Elisha Dyer and Stephen P. Olney, resigned.

Louisville, Cincinnati & Lexington.—The Kentucky Chancery Court has appointed Mr. George MacLeod Receiver, in place of Mr. Samuel Gill, who was removed on account of mental derangement.

Valley of Virginia.—At the annual meeting in Staunton, Va., Nov. 30, Mr. P. P. Pendleton was chosen President, with the following directors: Decatur H. Miller, Wm. Seemuller, for the City of Baltimore; Richard Norris, Wm. Keyser, for the Baltimore & Ohio Company; H. S. Harman, Staunton, Va.; Wm. Allen, Rockbridge County, Va.; J. W. Johnson, Botetourt County, Va.

Indianapolis, Cincinnati & Lafayette.—Mr. Joseph Sherwood has been appointed Assistant Superintendent, with office in Indianapolis.

Terre Haute & Indianapolis and Indianapolis & St. Louis.—Under the consolidation of the management of these two lines, the organization has been completed as follows: General Manager, John E. Simpson, St. Louis; General Superintendent Indianapolis & St. Louis, Samuel Woodward, Indianapolis; General Superintendent Terre Haute & Indianapolis, Joshua Staples, Indianapolis; General Ticket Agent, Charles E. Follett, St. Louis; Assistant General Ticket Agent, C. C. Cobb, Indianapolis; General Freight Agent, John C. Noyes, St. Louis; Assistant General Freight Agent, H. W. Hibbard, Indianapolis.

Providence & Springfield.—At the annual meeting in Providence, R. I., Dec. 6, the following directors were chosen: Amos N. Beckwith, Sidney Dillon, Moses B. I. Goddard, James O. Inman, Horace A. Kimball, Edward Pearce, John L. Ross, Albert L. Sayles, Wm. Tinkham.

Clover Hill.—James R. Werth, of Richmond, Va., has been appointed Receiver by the Virginia Chancery Court.

Erie.—John H. Doyle has been appointed Contracting Agent at Buffalo, in place of D. S. Williams, resigned.

Ohio & Mississippi.—Mr. J. E. Gimperting has been appointed Superintendent of the Eastern Division, and Mr. George W. Howard Superintendent of the Western Division.

Michigan Central.—At a meeting of the board in New York, Dec. 1, Mr. Samuel Sloan was chosen Vice-President. He is now President of the Delaware, Lackawanna & Western, the International & Great Northern, the Marquette, Houghton & Ontonagon, and some other companies, and is well known from his long connection with the Hudson River and other prominent companies.

Mr. D. A. Waterman has been appointed Auditor, in place of John Newell, resigned. He will also continue to act as General Accountant of the Detroit & Bay City Railroad, and his office will remain at Detroit, as heretofore.

Southern & Atlantic Telegraph.—At the annual meeting in New York, Dec. 2, the following directors were chosen: Charles W. Blossom, Henry Hentz, Francis Morris, Matthew Maury, Mayer Lehman, Charles M. Fry, Armistead Yale, T. T. Bryce, Philip Tabb, Seth B. French, F. Zerega, Ernest Beyer, B. G. Arnold, Lucius Hopkins, Estine Norton, J. T. Haneman, Henry Morgan, Wm. Woodward, A. B. Graves, L. M. Calvoresses, New York; W. G. Middleton, Charleston, S. C.; John B. Palmer, Columbia, S. C.; Robert N. Gourdin, Savannah, Ga.; W. F. Herring, Augusta, Ga.; George H. Hazlehurst, Macon, Ga.; C. H. Strong, Atlanta, Ga.; John W. Durr, Montgomery, Ala.; F. E. Stollenwerk, Mobile, Ala.; J. T. Doswell, J. B. Lafitte, New Orleans. Charles W. Blossom was chosen President, and Henry Hentz, Vice-President.

Chicago & Michigan Lake Shore.—The general offices, except that of the General Freight and Passenger Agent, which remains at Grand Rapids, Mich., were removed to Muskegon, Mich., Nov. 26.

W. R. Morrison having resigned the office of Assistant Treasurer, all communications for that office should be sent to J. H. Goodspeed, General Auditor. All freight, ticket and mileage reports should be sent to H. Park, Auditor.

Wilmington & Western.—In the foreclosure suit just begun, the United States Circuit Court has appointed Wm. M. Canby, Receiver.

New York & New England.—At the annual meeting in Boston, Dec. 7, the following directors were chosen: George W. Baldwin, A. W. Beard, Charles H. Dalton, Wm. T. Hart, Edward W. Kinsley, James Sturgis, Boston; George M. Rice, Worcester, Mass.; Earl P. Mason, James J. Smith, Providence, R. I.; John F. Slater, Norwich, Conn.; Frederick J. Kingsbury, Waterbury, Conn.; Legrand B. Cannon, Charles Dana, R. S. S. Grant, New York; Thomas Dickson, Scranton, Pa.

Boston, Revere Beach & Lynn.—At the annual meeting recently the following directors were chosen: A. P. Blake, Henry S. Washburn, John B. Alley, Henry Breed, Charles A. White, John N. Brown, John G. Webster, Charles W. Slack, S. A. Bradbury, T. B. Dix, T. W. Porter, David Loring. At a meeting of the directors subsequently held, A. P. Blake was re-elected President, and John G. Webster Treasurer.

Eastern.—Mr. James P. Cooke, of Salem, Mass., has been chosen a director, in place of Mr. Hooper, resigned.

New Brunswick.—The directors of this company are Messrs. A. Gibson, A. F. Randolph, Thomas Temple, B. Robertson, Alexander Jardine, J. S. B. De Veber, S. S. Hall. The officers are as follows: President, A. Gibson; Secretary and Treasurer, J. L. Inche; Consulting Engineer, E. R. Burpee; Chief Engineer, W. A. Nichols; Superintendent, Thomas Hobson; Master Mechanic, P. A. Logan; A. Seely, Accountant; C. H. Fairweather, A. F. Randolph, E. R. Burpee, Trustees for Construction Company; David Wark, Secretary Construction Company.

Atlantic & Southeastern.—At the annual meeting in Salineville, O., Dec. 1, the following directors were chosen: Ezra Frost, James Farmer, Joseph G. Lacoek, Joseph Riley, Allison Thompson, Thomas McConahey, P. Cunningham, A. B. Paul, Louis Bright. The board organized by electing Joseph G. Lacoek, President; Thomas McConahey, Treasurer; A. B. Paul, Secretary.

South & North Alabama.—At the annual meeting in Montgomery, Ala., Nov. 27, the following directors were chosen: B. Bibb, W. J. Bibb, John W. Durr, Bolling Hall, Thos. Joseph, Josiah Morris, J. W. Gloss, Montgomery, Ala.; J. R. Powell,

Birmingham, Ala.; Luke Pryor, John T. Tanner, Athens, Ala.; John D. Phelan, Decatur, Ala.; Thomas J. Martin, E. D. Standford, Louisville, Ky. The new directors are Messrs. Phelan and B. S. Bibb, who replace H. E. Faber and Charles Linn. The board re-elected J. W. Gloss President, and H. M. Bush, Secretary and Treasurer.

St. Louis, Kansas City & Northern.—Mr. George E. Parcell has been appointed Superintendent Eastern Division, in place of Mr. Vaughn, resigned. Mr. M. G. Carey has been appointed Superintendent Western Division, in place of C. L. Dunham, resigned.

RAILROAD LAW.

Regulating Rates in Missouri.

The Missouri Supreme Court Nov. 22 gave its decision in the case of Sloan against the Missouri Pacific Company, which is a suit brought under the law of 1872 to recover damages for discrimination. The original charter of the road gave the company power to regulate its own traffic. By the act of March 31, 1868, the right was surrendered to the State for a consideration, but not until after the expiration of 10 years. The present suit was brought under the act of April 1, 1872, and the Court held:

1. The act of 1872 is inoperative as to the defendant, as it would impair the contract contained in its charter and continued by the act of 1868.
2. It is competent for the Legislature to abandon to a railroad company the right to regulate its tolls.
3. The power of police regulation is conceded, but such regulations must not amount to an amendment of the charter of a company.
4. Whether a particular charge for transporting freight is or is not an unjust discrimination is a question for the courts and not for the Legislature.

A Coal Case.

The suit of Huntzinger and Calk against the Green Land Company, the Lehigh Valley Railroad Company, and others, which is now on trial in the Schuylkill County (Pa.) Court, involves indirectly the legality of the combination between the anthracite coal-carrying and mining companies. The plaintiffs in 1874 sold to the Green Land Company, which is controlled by the Lehigh Valley Railroad Company, a controlling interest, 17,504 shares, in the Philadelphia Coal Company, a corporation holding some of the Girard estate leases in Schuylkill County. There appears to have been a guarantee of profits, to secure which the remaining 17,496 shares of the coal company and some Lehigh Valley bonds were deposited. Recently the Green Land Company claimed that for the year ending June 1 the profits of the coal company had fallen below the stipulated amount, and ordered the sale of some of the Lehigh Valley bonds to make up the deficiency. The plaintiffs now bring suit to enjoin such sale and to cause the bonds and stocks to be returned to them. They claim that if the property had been properly worked the profits would have been sufficient, but that the defendants entered into an unlawful combination with other companies to regulate the production and price of coal, and that the long strike among the miners resulted directly from the action of this combination, and that strike alone caused the falling off in profits of the coal company.

OLD AND NEW ROADS.

Burlington, Cedar Rapids & Minnesota.

From a report made by General Winslow, the Receiver, at the request of the bondholders' committee, it appears that the road is not in very good condition. Its original location was faulty, and the crossing of so many other lines subjects it to severe competition. The road-bed is fair, but the ties, many of which were originally poor, were insufficient in number and a great many are rotting; a large number are needed for repairs. Renewals of iron have been neglected, and there is a considerable amount of new iron now needed. The bridges south of Cedar Rapids are now six years old, and many need repairs; north of Cedar Rapids they were generally poorly constructed and some are unsafe. Much of the piling needs renewal. The branches have been poorly constructed, and it is intimated that some of them are a very poor investment, although from the manner in which the accounts have been kept it is difficult to ascertain their real value to the road. The equipment consists of 30 engines, 12 passenger, 2 sleeping, 4 combination, 5 baggage and 10 way cars; 550 box, 20 stock and 190 coal and flat cars; 90 hand and rubble cars. It is in fair repair.

The bonded debt is as follows:

Main Line, first mortgage	\$5,400,000
Milwaukee Division	2,200,000
Muskegon Division	800,000
Pacific Division	1,800,000
Income and equipment bonds	2,000,000
Total	\$12,200,000

This includes all bonds hypothecated and also \$1,400,000 income bonds delivered by the trustee assigned to President Blair. Deducting the latter the capital account stands as follows:

Stock	\$5,915,000
Bonds	10,800,000
Unpaid coupons, gold and currency	1,297,000
Floating debt	1,439,035
Total	\$19,549,035

There is also a claim for \$30,000 internal revenue tax on coupons.

The gross revenue for the present year is estimated at \$1,277,000. There must be expended about \$388,000 for taxes, legal expenses, labor supplies, new iron and repairs of machinery, which will absorb all the net earnings and leave some \$90,000 to be paid next year. The Receiver thinks that if the road is released from all outside claims by a foreclosure, and the net earnings next year are devoted to improving the road and putting it in good condition, it will be thereafter able to earn a fair interest on what it would now cost to build it.

It is also stated that the gross earnings heretofore reported were too large, the rebates and overcharges never having been deducted, and an estimated fixed sum having been added every month, which was claimed to be earned by hauling the company's own freight. For instance, the gross earnings reported in 1871 were \$777,147.72, but the actual gross earnings, after deducting rebates, errors, etc., were only \$522,020. Reported gross earnings in 1872, \$995,959.35; actual gross earnings, \$852,394.97. Ditto 1873, reported, \$1,180,321.10; actual, \$1,057,373.42. Ditto 1874, reported, \$1,246,911.90; actual, \$1,191,669.53. This has been an injury to the road by causing it to be put under the Iowa law, in a higher class than it really belonged to, thereby limiting its charges on local business.

Baltimore & Southern Steam Transportation Company.

A meeting was held in Baltimore Nov. 23 to consider the best means of closing up the business of the company, as its affairs have been very seriously involved for some time past. In September last a meeting of the company authorized an additional issue of stock to the amount of \$125,000. This stock it has been found impossible to dispose of, either as common or preferred, during the existing stringency in business, hence this meeting was called.

After a thorough discussion of the situation and prospects of the company, it was decided that the rights of the

stockholders should be transferred to the President and directors, and a resolution was adopted allowing those officers to continue or close the line, as it shall be deemed most expedient by them. The entire indebtedness of the company amounts to about \$120,000, and the property owned by it will doubtless more than satisfy its creditors. The general opinion is that the line will be continued, but that the number of stockholders in the company will be greatly diminished.

The company owns six steamers and runs lines from Baltimore to Wilmington, N. C., and Charleston, S. C.

Leavenworth, Lawrence & Galveston.

The Receiver, Mr. B. S. Henning, makes the following statement of earnings and expenses for October:

	Earnings.	Expenses.	Net earn.	P. c. of exps.
Main Line	\$31,278 32	\$12,394 10	\$18,884 22	39
Kansas City & Santa Fe Branch	5,581 88	3,360 75	2,221 13	60
Southern Kansas Branch	1,461 20	726 05	735 15	30

Totals	\$38,321 40	\$16,480 90	\$21,840 50	43
Total Main Line and branches, 1874	39,186 67	17,601 39	15,585 48	33

This shows an increase this year of \$5,134.53, or 15.5 per cent., in earnings; a decrease of \$1,120.49, or 6.4 per cent., in expenses, and an increase of \$6,255.02, or 40.1 per cent., in net earnings.

New Orleans Pacific.

An additional force of men, mules and scrapers has been put at work on the grading between Alexandria, La., and Natchitoches. The grade is now nearly through the swamp back of Alexandria, and is making rapid progress on the higher lands, where the work is very light.

New York & New England.

At the annual meeting in Boston, Dec. 7, no report was presented, the present company having been in possession of the road only since July 31. It was stated that the net earnings for the year ending Sept. 30, were \$149,000, against \$197,000 in 1874 and \$128,000 in 1873. To pay off underlying loans and complete the road to the Hudson River will take \$6,000,000. The stockholders voted to authorize the execution of a new mortgage and the issue of bonds under it for those purposes.

Wilmington & Western.

Wm. Calhoun, of New York, a bondholder, has begun suit in the United States Circuit Court to foreclose the first mortgage. The Court appointed Wm. M. Canby Receiver, and he filed the required bonds and took possession. The road is about 20 miles long, from Wilmington, Del., to Landenberg, Pa., and the first mortgage is for \$500,000. Interest has been in default nearly two years.

Western North Carolina.

In Raleigh, N. C., Dec. 7, the United States Circuit Court granted an order to remand to the State courts the suit to compel the State Auditor to put upon the tax levy the special tax to pay interest on bonds issued in aid of this road. The grounds of the order were that the Federal Court had no proper jurisdiction in the case. An appeal to the Supreme Court was allowed.

Illinois Central.

The Land Department reports for November sales of 1,152.67 acres of land for \$9,286.84; cash collections on land contracts, \$20,491.72.

The Traffic Department reports earnings for November as follows:

	1875.	1874.	Increase.	P. c.
In Illinois, 707 miles	\$504,184 95	\$516,163 96	\$78,921 39	15.1
In Iowa, 402 miles	193,668 85	152,779 86	40,889 00	26.8

Total, 1,109 miles..... \$787,853 80 \$668,943 41 \$118,910 39 17.8

The Illinois earnings were \$840 per mile and the Iowa earnings \$482, the average of the whole line being \$710 per mile.

The traffic of the entire line for the eleven months ending Nov. 30 was:

Corrected to Sept. 1..... \$4,871,888 14

Estimated for September, October and November..... 2,367,119 84

Total..... \$7,239,007 98

This is an average of \$6,528 per mile for the whole line.

Delaware & Bound Brook.

The Chancellor of New Jersey has set Dec. 10, 11 and 12 for the hearing of the rest of the arguments on the application for an injunction to restrain the company from completing the bridge over the Delaware at Yardleyville.

European and North American.

The land-grant bondholders met in Bangor, Me., Nov. 30, for the purpose of considering the contract proposed to be made with the floating-debt holders with reference to operating the road for the best interests of all creditors. After some discussion as to the effect of the contract proposed, it was laid on the table. The Treasurer, Mr. N. Woods, stated the receipts and expenditures for four months and ten days, from June 17 to Oct. 27, as follows:

Receipts	\$236,659 15
Expenditures	177,145 02
Balance	\$59,514 13

This balance is represented by amounts due from connecting roads, station agents, the United States and New Brunswick post office departments, and individuals who hold sums by virtue of trustee processes. The expense side of the account is somewhat larger than it would be from the fact that it embraces the pay of employees for a longer period, there being several months pay due them outside of the two dates above given. Mr. Woods stated that the receipts of the road fell off \$8,000 in July, \$10,000 in August, and \$12,000 in September, but in October there was a slight increase. After some further discussion the meeting adjourned without taking any action.

The directors met in Bangor, Dec. 2, and passed a formal vote transferring the property to the Trustee in possession.

Cincinnati, Rockport & Southwestern.

The Indianapolis Journal says: "Wm. Hanneman, President, and W. O. Rockwood, Treasurer of the Cincinnati, Rockport & Southwestern road, who spent last week in the southern part of the State, returned Saturday. While there, a new line for the extension of this road was surveyed, being run so as to connect with the projected Air-Line road at Huntington. A road by this survey can be built at an average of cut and fill not to exceed 1 1/2 feet, and an estimated saving over lines previously surveyed of over \$20,000. So well satisfied were these officials that this was the best line yet run that they have contracted for the grading of the road-bed, the work to be begun immediately. As soon as this section of the road is finished steps will be taken to further extend the line to connect with the Ohio & Mississippi road."

Pennsylvania.

The City Council of Philadelphia has passed the ordinance giving to this company the contract for the construction of a Howe truss bridge to replace the burned Market street bridge over the Schuylkill upon the terms named in the company's proposal, which was noted last week. Work will be begun at once.

The Navy Yard property at Philadelphia was sold at auction by the United States last week for \$1,000,000, and concerning

the sale the Philadelphia Bulletin of Dec. 3 says: "From private information received this morning, the report published yesterday that the Navy Yard property was bought in by Messrs. Drexel & Co. and S. W. Welsh for the Pennsylvania Railroad Company is fully confirmed."

"It is hinted that \$1,000,000 was a good round price for the yard, and that the probability is the same at private sale would not have brought that figure within a hundred thousand dollars. The great value of the river frontage intact, however, fully makes up the difference. It is asserted this morning that the Baltimore & Ohio Railroad Company had a representative at the sale and that he was authorized to make the bid of \$800,000."

"The Pennsylvania Railroad Company have as yet no definite plan for the use of the new property further than that they intended to use it as the site for a grand depot, where all their vast freight business in this city will be concentrated. The depot on Delaware avenue is not extensive enough to fully accommodate the business. When the projected depot is finished with complete water and railway facilities, it is thought that the depot on Market street and the one on Delaware avenue will be abolished."

Green Mountain.

A number of the towns along the line in Vermont have voted to subscribe to the stock, and considerable progress has been made in securing other subscriptions. A meeting was to be held in Rochester, Vt., this week to complete the permanent organization of the company, and to take into consideration a proposal of some New York parties to build and equip the road for \$6,000 per mile in cash, and the balance in its securities.

Erie.

The New York Supreme Court at General Term has confirmed a judgment given by the Special Term against this company for \$86,693.69 in favor of the estate of John Arnot. The suit was brought to recover the amount of unpaid coupons due on certain bonds issued by the Boston, Hartford & Erie Company, and guaranteed by the Erie. This decision makes the Erie liable for a large amount, and, in view of its importance, it is altogether likely that it will be carried up to the Court of Appeals.

The New York Supreme Court, Dec. 3, authorized the Receiver to transmit to Mr. John Morris, counsel of the English bondholders' committee in London, £2,000 to be used in prosecuting the claims of the company against James McHenry and the London Banking Association.

Atlantic & Gulf.

The Junction Branch is completed, and the first passenger train ran over it Dec. 1. This new branch leaves the main line about two miles from the Savannah depot and runs northwest to a junction with the Savannah & Charleston road. It is four miles long, and enables the two roads to exchange business without transfer, besides giving the Charleston road a new entrance into Savannah, for which it has heretofore been dependent upon the Central.

Grand Rapids & Indiana.

The land sales for September amounted to \$27,963.88; for the nine months ending Sept. 30 they were \$142,692.42, an increase of more than 75 per cent. over the same period of 1874. The total sales of land up to Sept. 30 amounted to \$1,934,582.91.

Ohio & Toledo.

The grading of the extension northeastward is now completed to Cannonsburg, O., eight miles from Carrollton, including a trestle 300 feet long. Tracklaying will be begun as soon as the iron arrives.

Manhattan.

The New York Supreme Court has appointed Oliver H. Palmer, John T. Agnew and E. L. Lawrence Commissioners, under the rapid transit law, on application of this company, which has failed to secure the assent of the property-owners to the construction of its proposed elevated road through the streets designated by the former commission.

Lafayette, Muncie & Bloomington.

The United States Circuit Court has refused to grant the injunction to restrain this company from crossing the Indianapolis, Cincinnati & Lafayette and running upon its right of way near Lafayette. The application was made by the trustees under a mortgage of the Indianapolis road, and the principal question was whether the ground condemned and in use by a railroad company could be taken and condemned by another railroad company. The judge decided that under the statute of Indiana such a series of condemnations could be made where the public interests required it, and that the only ground on which a court of equity could interfere in such a case would be when the power to condemn is wantonly abused. Work is now being pushed, and the road will soon be completed to Lafayette.

Atlantic & Great Western.

Mr. Charles E. Lewis, M. P., chairman of the committee of holders of the leased line rental trust bondholders, arrived in New York recently, his purpose in coming to the United States being to make an examination of the leased lines and to see what can be done to secure the interests of the bondholders he represents.

In the Bischoffsheim suit against the company in the Ohio Court of Common Pleas, at Akron, Dec. 4, the Court decided to overrule a motion to set aside the answer and cross-plea filed by the company and allowed both to stand.

Pacific, of Missouri.

The only new movement in the various suits has been a motion to make St. Louis County a defendant in the Littlefield and the Ketchum suits. A brief has also been filed in support of the motion to release the road from the custody and control of the Atlantic & Pacific receivers.

The Illinois Narrow-Gauge Convention.

This convention met in Canton, Ill., Nov. 30, a large number of delegates from Western Illinois and Iowa being present. Mr. George Snyder, of Monmouth, Ill., was made Chairman, with a number of vice-presidents and secretaries. Officers of the Havana, Rantoul & Eastern Company made statements as to the progress and prospects of that road, and a number of speeches were made advocating its completion and the construction of a line to connect it with the projected Burlington & Northwestern road. Resolutions were passed, advocating the construction of these lines and a narrow-gauge through road to the sea-board, and advising that bonded debt should be avoided and the roads built from stock subscriptions as far as possible. After appointing delegates to the Cheap Transportation Convention, to be held in Chicago, Dec. 15, the convention adjourned.

New Orleans, Mobile & Texas.

Mr. F. M. Ames, who, as trustee, bought the road for \$450,000 at the foreclosure sale, has issued a circular to bondholders, in which he says that the former plan of re-organization has not been sanctioned by them, and he now proposes to close his trusteeship and pass the road over to bondholders at the price paid for it, with an additional sum of about \$50,000 for charges on the property, taxes, etc. He concludes as follows: "I have caused to be prepared articles of association similar to those adopted in 1873 by a large number of the bondholders, for the formation of the New Orleans & Texas Railroad Company. These articles are relieved from the clauses which provided for State aid, and for a union with the holders of the second mort-

gage bonds on the Mobile division. The articles make no provision for future operations; they simply create an organized company which can contract with me. When a subscription of seven-twelfths of the bonds is made, I shall feel at liberty to deal with the subscribers for a sale of the property on the terms indicated. This plan has the approval of the advisory committee, chosen by you Dec. 23, 1874. Your subscription (payable in bonds) and cash to defray the before-mentioned charges, say \$7 per bond for bonds dated Jan. 1, 1872, and \$18 for bonds of March 15, 1870, is requested."

Oleiver Hill.

On petition of the trustees under the mortgages, the Virginia Chancery Court has appointed James R. Werth, of Richmond, Receiver of the entire property of the company. There are bonds outstanding to the amount of \$525,000, on which no interest has been paid for some time, and there is a large floating debt, including \$50,000 taxes due the State. The property consists of a tract of coal land, on which are some mines, and a railroad 14 miles long connecting the mines with the Richmond & Petersburg road.

Webster City & Des Moines.

There is talk of building a narrow-gauge railroad from Webster City, Ia., west by south to the coal mines at Tyson's Mills on the Des Moines River, below Fort Dodge. It would be about 18 miles long.

Little Rock & Fort Smith.

Work is progressing steadily on the extension from Altus, Ark., to Fort Smith. A considerable force is employed, especially in the rock cuts near Ozark.

Missouri, Iowa & Nebraska.

This company is once more agitating the question of the extension of its road westward. Meetings have been held and attempts made to secure county subscriptions along the line.

Northwest Arkansas.

This projected road is to extend from a convenient point on the Little Rock & Fort Smith road northward through Fayetteville and Bentonville to the Missouri line, a distance of about 80 miles. A bill has been passed by the Arkansas Legislature to give the road the forfeited tax lands in the counties through which it passes.

Gloversville & Northville.

The track is laid to Northville, N. Y., 16 miles northeast from Gloversville, and regular trains began to run Dec. 2. The road is an extension of the Fonda, Johnstown & Gloversville.

Flint & Pere Marquette.

The lumbermen along the proposed line are trying to induce this company to build a branch from some point on its line in Isabella County, Mich., west by north, crossing the Grand Rapids & Indiana road north of Clam Lake, and then through Sherman to some point on Lake Michigan, with possibly a branch to Traverse City.

The New Bedford Standard says: "We understand the coupons on the land-grant 10 per cent. bonds of the Flint & Pere Marquette Railroad Company, issued for the Flint & Holly Railroad purchase, are now being paid."

Michigan Air Line.

The Lansing Republican has the following statement of a certificate filed with the Secretary of State of Michigan Nov. 23: "Notice of foreclosure on a portion of the Michigan Air Line Railroad, from Ridgeway, Macomb County, to its point of crossing the Detroit & Milwaukee Railroad, in the county of Oakland. Name changed to Michigan Air Line Railway. Capital stock, \$300,000."

Geneva & Hornellsville.

This company, the Rochester, Hornellsville & Pine Creek, and the Gaines & State Line companies have concluded an agreement of consolidation. None of the three companies owns any completed road. The projected line will extend from Geneva, N. Y., southwest to the Pennsylvania State line, in the direction of the McKean County coal field.

St. Louis, Keokuk & Northwestern.

A mortgage of \$2,700,000 on the property of this company to Daniel P. Ellis, of Cleveland, O., trustee, is being filed in the counties along the line.

Messrs. Tim Ford & Co., of Keokuk, Ia., contractors for the extension from Hannibal to Louisiana, have commenced work and are gradually increasing their force.

Sharon.

This road is now completed, and trains began to run over it last week. It is about eight miles long, from Sharon, Pa., northward to the Atlantic & Great Western at Cape Horn, near Transfer Station. It follows a furnace siding for about a mile from Sharon, and for part of the way north of that place runs along the tow-path of the abandoned canal. It will be worked by the Atlantic & Great Western.

Toledo, Peoria & Warsaw.

In the United States Circuit Court in Chicago, Dec. 4, Receiver Hopkins reported that there were a number of claims for supplies furnished before his appointment that should be paid, but that he was unable to do so, all the available funds having been used in repairs of the road. The Court referred the report to Mr. H. W. Bishop, Master in Chancery, with orders to report whether the claims were for supplies furnished; whether the creditors had begun suit to enforce their claims within the time limited by statute, and whether claims on which suits were not commenced had been reported to the Court by the company.

Chicago Transfer Railway.

A company by this name has filed articles of incorporation in Illinois. The line is to run from the junction of the Illinois & Michigan Canal with the Chicago River, southwest along the south side of the canal to the Chicago & Southern road, and to such other points in Cook County as the business of the company may require. The capital stock is fixed at \$50,000, and the incorporators are Adam Smith, George H. Ward, Wm. J. Campbell, Frederick Honcoup and Pierson D. Smith.

Dividends.

Dividends have been declared by the following companies: New York & Harlem, by New York Central & Hudson River, lessee, 4 per cent., semi-annual, payable Jan. 3. Transfer books closed from Dec. 18 to Jan. 4.

Syracuse, Binghamton & New York, 4 per cent., payable Dec. 15.

Little Miami (Pittsburgh, Cincinnati & St. Louis, lessee), 2 per cent., quarterly, payable Dec. 10.

New York Central & Hudson River, 2 per cent. quarterly, payable Jan. 15.

New Brunswick.

The completed road of this company now consists of a main line running from Gibson, N. B., northeast 45 miles to Woodstock Junction, and thence northward, following the valley of the St. John to Perth, 45 miles further, making 90 miles in all. The line is to be extended from Perth up the St. John to Edmundston, 70 miles. From Woodstock Junction to Woodstock, 10 miles, there is a branch completed except a bridge over the St. John at Woodstock, now under construction. This bridge is a Howe truss with five spans of 160 feet each, one of 60 and one of 40 feet, and a sliding draw 60 feet long. It is a double-

deck bridge, the railroad running on the upper chord and the highway on the lower.

From Perth another branch, just completed, runs westward to Fort Fairfield in Maine, 16 miles. It crosses the St. John at Andover on a Howe truss bridge having five spans of 160 feet each, and a sliding draw of 60 feet. Ten miles of this branch are in New Brunswick and five in Maine, the latter being built under the charter of the Aroostook Railroad and held by the New Brunswick Company under lease. This branch is to be extended southwest through Caribou to Presque Isle, 20 miles, at once.

The road is of 3 feet 6 inches gauge, is laid with steel rails, 45 pounds to the yard, with wooden bridges, and is said to be well built and ballasted. The maximum grade is 85 feet to the mile. It is equipped with cars of American pattern, many of them built at its own shops, and with engines of the Mason-Fairlie pattern, built by the Mason Machine Company at Taunton, Mass. It has a land grant of 10,000 acres per mile for the main line and Woodstock Branch; for the Fort Fairfield Branch it had a subsidy of \$5,000 per mile for the 10 miles in New Brunswick and \$14,000 town bonds for the five miles in Maine.

New York & Oswego Midland.

The receivers have been able to spend some money this fall in the improvement of the road. Much of the road-bed has been ditched, the cuts widened and some much-needed repairs made to the trestles. The improvement of Smith Hill cut, near Hurley, is nearly finished, reducing considerably the heavy grade at that point.

Cairo & St. Louis.

Operations for October are reported as follows:

Gross earnings (\$213 per mile).....	\$31,213 47
Working expenses (66.98 per cent.).....	20,907 61
Rentals of road and equipment.....	2,511 66
Total expenses (75.02 per cent.).....	\$23,419 27

Net earnings (\$53 per mile)..... \$7,794 20

Passenger trains ran 11,223 miles; freight, 9,958; coal, 8,610; total, 29,791 miles. The average receipts per train mile were for passenger trains, 80.01 cents; freight trains, 136.79 cents; coal trains, 100.06 cents. The receipts continue very light.

Baltimore & Ohio.

The Baltimore Gazette of Dec. 7 says: "The Baltimore & Ohio Railroad Company has adopted a very important arrangement, to take effect on Wednesday, the 8th instant, in regard to grain shipments to Baltimore. It will provide a drawback of three cents per one hundred pounds upon all grain brought to the city from all Western points, which may be exported through the Baltimore & Ohio elevators to foreign ports."

"This arrangement is made with a view of attracting to this city the grain shipments for foreign export, which to a large extent have been shipped to Boston, New York and Philadelphia, and taken in connection with the recent reduction of charges at the elevator, it is but reasonable to expect that a very large increased traffic over the road will be secured, to the great advantage of the Baltimore grain trade."

This is similar to rebates made on export grain at Philadelphia and Boston.

Grand Southern.

This project is looking up again, and a construction company, said to be responsible, has offered to build the road, provided the company will pay for the right of way and land damages. The construction company will take the provincial subsidy of \$5,000 per mile and the balance in bonds. The right of way will cost about \$1,000 per mile, and an attempt is to be made to get an extra grant of that amount from the Government. The road is to run from St. John, N. B., westward to Calais, Me., there to connect with the projected Bangor & Calais Shore Line road.

St. Paul & Pacific.

Quotations on the Amsterdam Stock Exchange Nov. 23 were as follows: First Section 7s, 32½; Second Section 7s, 17; consolidated 7s, 22; 7s of 1869, 10 7-16; St. Vincent and Brainerd extensions 7s, 35. The latter are thus held almost valueless where they are chiefly owned.

Auction Sale of Railroad Securities.

In New York, Dec. 8, at auction, the following prices were obtained: Chesapeake & Ohio first-mortgage bonds, 30; income 7 per cent. bonds, 11; Burlington, Cedar Rapids & Minnesota first-mortgage bonds, 32½; funded coupon scrip, 20; Toledo, Wabash & Western consolidated mortgage bonds, 25; Wabash & Western second-mortgage bonds, 49½; Toledo & Wabash second-mortgage bonds, 49½; South Side of Long Island first-mortgage bonds, 50; Rensselaer & Saratoga stock, 116; Chicago, Danville & Vincennes, first-mortgage Indiana Division bonds, 22½; New York, Housatonic & Northern, \$250,000 first-mortgage bonds brought \$1,600 for the lot.

Indianapolis, Decatur & Springfield.

A special meeting of the stockholders will be held in Tuscola, Ill., Feb. 9, 1876, to vote on the question of authorizing the issue of \$1,800,000 first-mortgage bonds and \$2,850,000 second-mortgage bonds, as voted by the board of directors.

Columbus, Chicago & Indiana Central.

Notice is given by advertisement that the Gallatin National Bank, of New York, will purchase at par the following coupons:

Indiana Central, coupons due July 1, 1875; Columbus & Indianapolis Central, first mortgage coupons, due July 1, 1875; second mortgage coupons due May 1, 1875; Union & Logansport, first mortgage coupons due April 1, 1875; Toledo, Logansport & Burlington, first mortgage coupons due Aug. 1, 1875; second mortgage coupons due Aug. 1, 1875.

These are all mortgages on the various roads which became part of this line by consolidation, and this action is doubtless taken to prevent the foreclosure of any of these underlying mortgages and the complications which would arise in consequence.

A recently issued circular, signed by Messrs. A. Iselin, Wm. Whitworth and Richard T. Wilson, after referring to the lapse of the agreement of Feb. 23, 1875, says:

"The undersigned, feeling that the interests they represent would be greatly imperilled, if a portion at least of the bondholders did not organize to act in concert, have withdrawn their subscriptions to the agreement of Feb. 23, and have had a new one drawn up by Messrs. Evarts, Southmayd & Choate, which has already been subscribed to by the requisite number to make it binding."

"It differs in the following particulars from the former one:

1. Five days' notice to be given for meetings, instead of twenty.

2. Bonds must be deposited immediately, instead of forty days after signing.

3. The committee is composed of three members, instead of five, and is permanent until one-half of the outstanding bonds has been subscribed for. An election will then take place for a committee, which at the option of the bondholders may be increased to five.

4. The agreement to be binding when three million dollars of bonds have been subscribed for, instead of \$5,214,000.

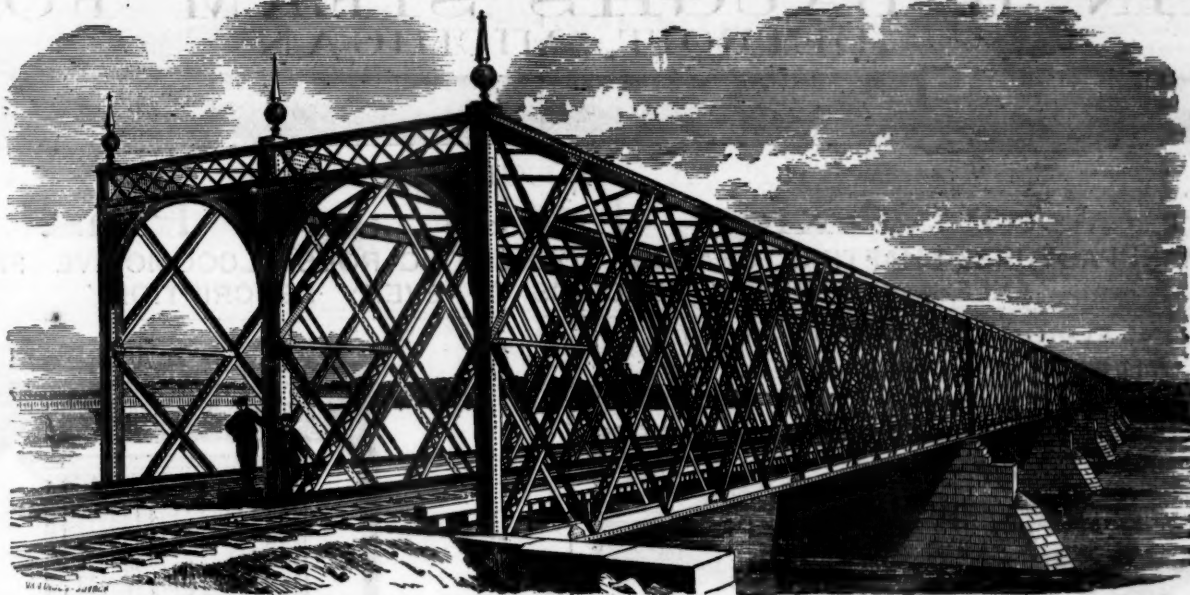
5. In case of foreclosure, the committee, instead of having the power to call for a payment of 20 per cent. on the deposited bonds, to pay the cash portion of the purchase price, must consult the subscribing bondholders as to the price to be paid for the road, and as to the means to provide for the cash por-

Total worked.....281.

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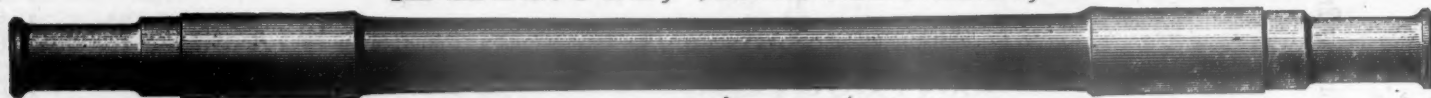
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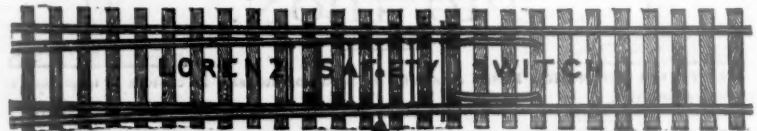
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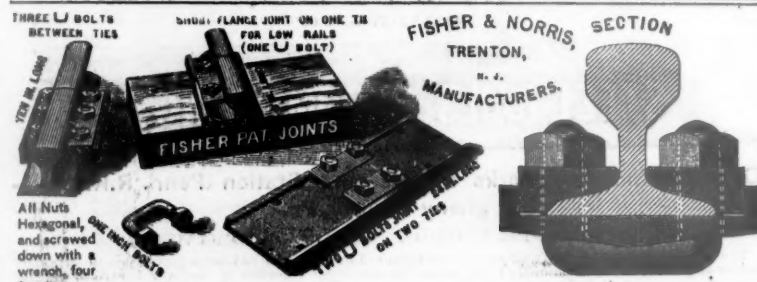
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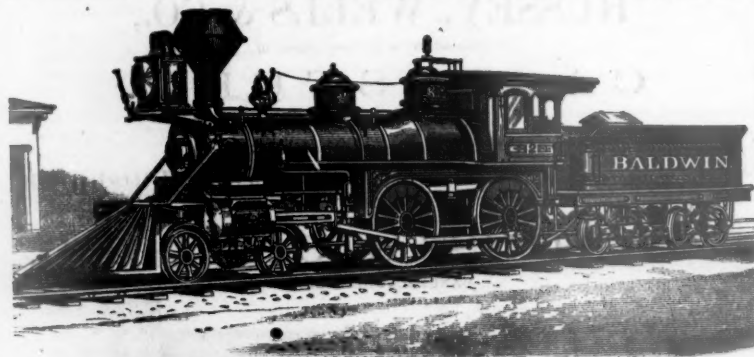
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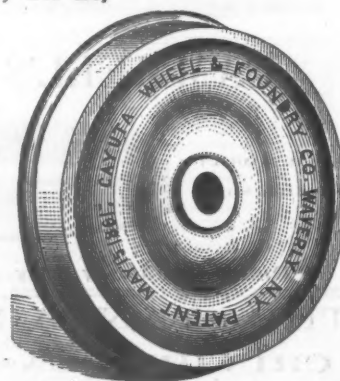
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